

*Final cruise report*

**2017 R/V *Manta* Expeditions to the Northwestern Gulf of Mexico  
(DFH32: 2017/09/21 – 2017/09/26 & DFH33: 2017/09/28 – 2017/10/01)**

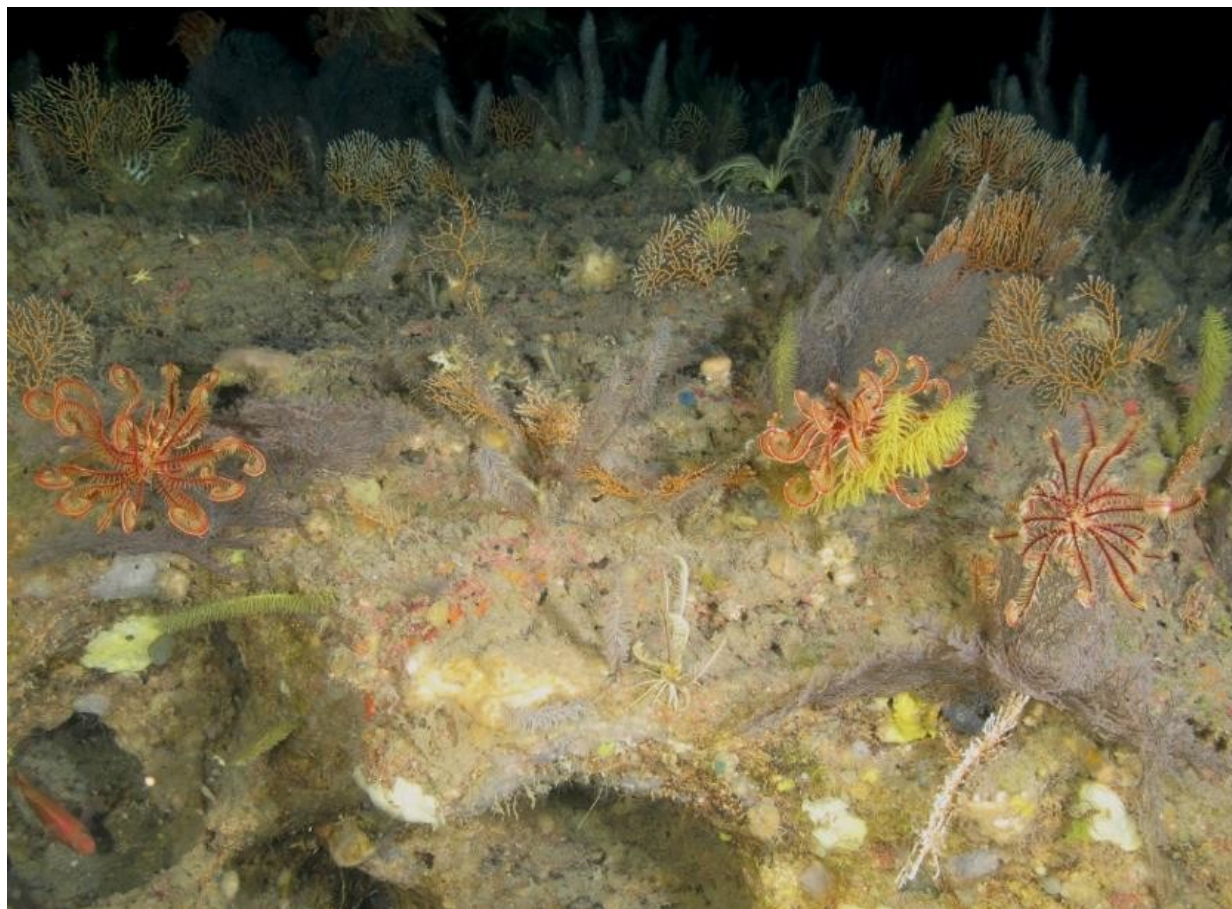
By

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## **Objectives**

In 2017, two expeditions aboard R/V *Manta* were conducted to the Northwestern Gulf of Mexico. The objectives of these expeditions were to conduct remotely operated vehicle (ROV) surveys at multiple banks in the Northwestern Gulf of Mexico currently being considered for expansion of the Flower Garden Banks National Marine Sanctuary (FGBNMS) under alternative 3. These banks included Sonnier, Alderdice, McGrail, Elvers, MacNeil, Parker, Bright, and 28 Fathom Bank (Figure 1). Specifically, these expeditions sought to:

- (1) Capture video and imagery of sites of interest;
- (2) Explore unknown sites;
- (3) Conduct transect surveys according to DSCRTP protocols and;
- (4) Collect biological specimens of mesophotic corals, sponges, and associated taxa.

## **Methodology**

### ***ROV seafloor surveys***

Seafloor surveys were conducted using the ROV *Mohawk* operated by the Undersea Research Program at the University of North Carolina at Wilmington. During each seafloor survey, the ROV transited at an altitude of approximately <1 m off the bottom and a speed over ground of <0.50 knots. The ROV was equipped with the following equipment that collected continuous data throughout each dive: (1) a high-definition, forward-looking video camera, used to record each dive once on bottom until leaving for the surface (2) a high-definition, forward-looking still camera to collect images of interesting biology and photograph transect paths (3) parallel lasers projected 10 cm apart, which were used to scale images collected by the video and still cameras, (4) an Imaginex 881 sonar system linked to a Trimble SP461 GPS/heading receiver, which provided position information at <0.5 m accuracy every two seconds, and (5) a tool skid mounted on the bottom of the ROV which includes an ECA Robotics five-function manipulator arm, retractable bio box with three dividers, four rotatable collection buckets, and reversible/variable speed pump for suction hose usable by way of the manipulator to collect items into the buckets

### ***ROV transects***

Five minute transects were conducted over the varying habitat types encountered during each ROV dive. Transects were conducted at approximately 1 m altitude off the bottom traveling at 0.5 knots. Photographs were collected using the still-image camera each time the reference lasers passed over benthic colonies or every 20 seconds, depending on biological density at each given site. A voice recording was maintained in the HD video recording to note the start and end of each transect via microphone connected to the recording system. This information will be used in the post-processing of transect data. Typically, two transects were conducted during each dive.

### ***Specimen collections***

A total of 54 biological specimens and two sediment samples were collected during seafloor surveys using the manipulator arm of the ROV. For each collected specimen, the date, time, latitude, longitude, and depth, was recorded at the time of collection. Once specimens were brought back onto the deck of the ship, they were examined for commensal organisms, labeled, photographed and inventoried into a database containing all relevant metadata. Any commensal

organisms found on the specimens were separated from the sample and processed separately. Once photographed and labeled, specimens were preserved in an appropriate medium.

### **Expedition schedule**

**Table 1.** Schedule of expedition DFH32 to the Northwestern Gulf of Mexico.

Date	Operations	Time	Comment
2017-09-21	Departed Galveston, TX TAMUG dock	20:00	
2017-09-22	Arrived Sonnier Bank	8:30	Conduct ROV launch/recovery training
	Start ROV Ops Sonnier Bank	9:05	
	End ROV Ops Sonnier Bank	13:53	8 Transects completed at Sonier Bank; 5 samples
	Start ROV Ops Alderdice Bank	16:17	
	End ROV Ops Alderdice Bank	18:04	
2017-09-23	Start ROV Ops Alderdice Bank	7:31	
	End ROV Ops Alderdice Bank	12:52	9 transects completed at Alderdice bank; 17 samples
2017-09-23	Start ROV Ops Parker Bank	13:59	
	End ROV Ops Parker Bank	14:51	Aborted Ops due to strong currents; 0 transects
2017-09-23	Arrive McGrail bank; Start ROV Ops	16:36	
	End ROV Ops McGrail Bank	18:32	
2017-09-24	Start ROV Ops McGrail Bank	7:31	
	End ROV Ops McGrail Bank	17:37	18 Transect completed; 23 samples
2017-09-25	Start ROV Ops Elvers Bank	7:38	
	End ROV Ops Elvers Bank	17:47	
2017-09-26	Start ROV Ops Elvers Bank	7:39	19 transects completed; 9 samples
	End ROV Ops Elvers Bank	12:12	

**Table 2.** Schedule of expedition DFH33 to the Northwestern Gulf of Mexico.

Date	Operations	Time	Comment
2017-09-28	Left TAMUG dock	21:00	
2017-09-28	Kemps Ridley turtle released	22:58	
2017-09-29	Arrive MacNeil Bank	8:00	
2017-09-29	Begin ROV Ops MacNeil Bank	8:30	
2017-09-30	End ROV Ops McNeil Bank/Depart for Parker Bank	17:29	10 Transect completed; 8 samples
2017-09-30	Arrive Parker Bank	6:00	
2017-09-30	Begin ROV Ops Parker Bank	7:30	
2017-09-30	End ROV Ops Parker Bank/Depart for Bright Bank	18:30	14 Transects completed; 23 samples
2017-10-01	Begin ROV Ops Bright Bank Complex	7:30	
2017-10-01	ROV power failure, stand down for repair	13:57	
2017-10-01	Resume ROV Ops	15:58	
2017-10-01	ROV power failure, major repairs needed, End ROV Ops Bright Bank	16:09	7 Transects completed; 7 samples
2017-10-01	End cruise, depart for TAMUG dock	16:30	

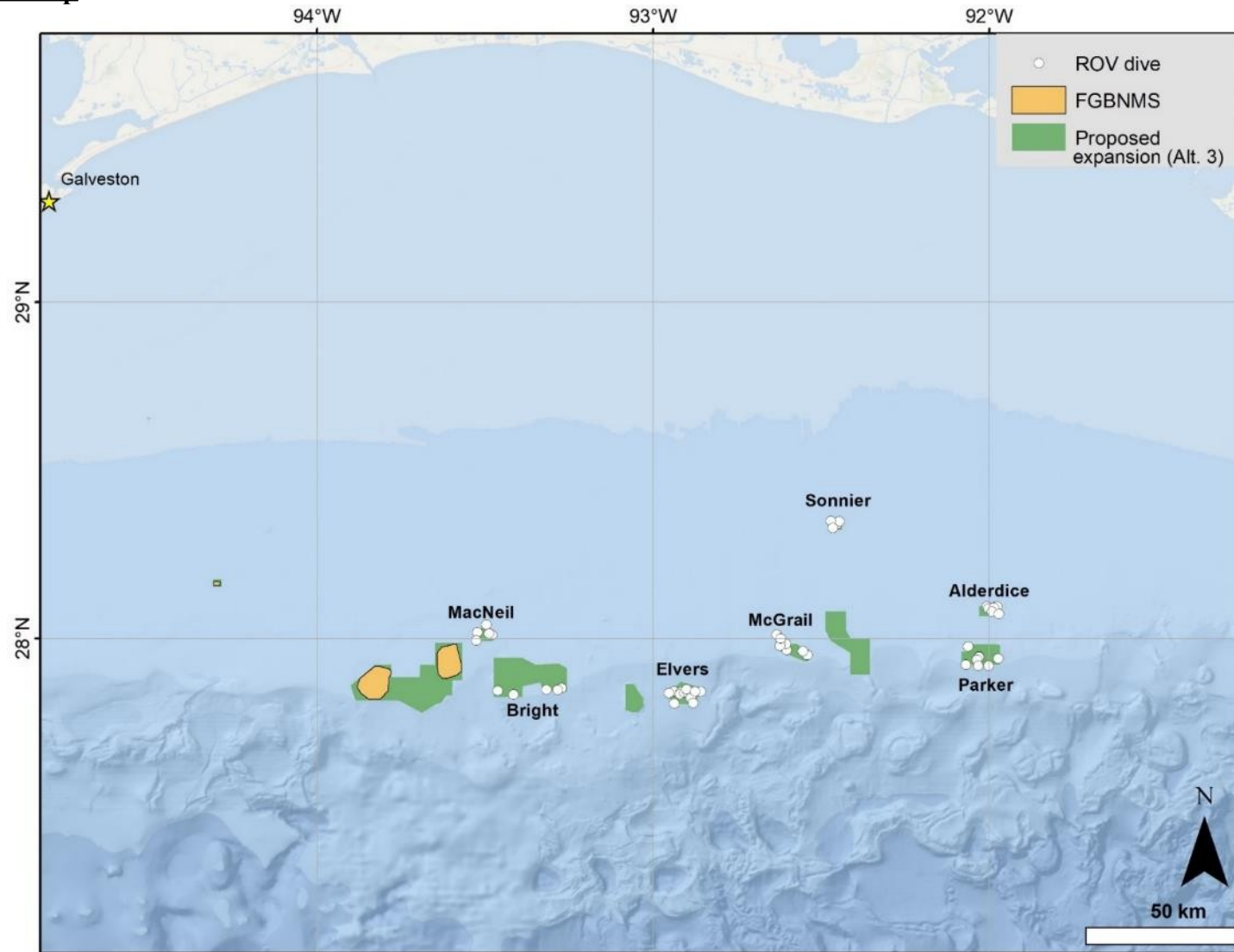
## **Participant list**

**Table 3.** List of participants of expedition DFH32 that surveyed mesophotic ecosystems in the Northwestern Gulf of Mexico on September 21–26, 2017.

<b>Name</b>	<b>Role</b>	<b>Affiliation</b>	<b>Email</b>
Travis Sterne	Science	FGBNMS/CPC	travis.sterne@noaa.gov
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Lance Horn	Science	UNCW-UVP	hornl@uncw.edu
Eric Glidden	Science	UNCW-UVP	gliddene@uncw.edu
Nadia Alomari	Science	CUNY	nadiaalomari85@yahoo.com
Mercer Brugler	Science	CUNY	mbrugler@amnh.org
Robert McGuinn	Science	DSC RTP	robert.mcguinn@noaa.gov
Erin Easton	Science	UTRGV	erin.easton@utrgv.edu
Seth Leo	Captain	CPC	seth.leo@cpcperfoms.com
Michael Allison	Captain	CPC	michael.allison@cpcperfoms.com
Rachel Sellers	Galleyhand	CPC	rachel.sellers@cpcperfoms.com
Gerry Amador	Deckhand	CPC	gerry.amador@cpcperfoms.com

**Table 4.** List of participants of expedition DFH33 that surveyed mesophotic ecosystems in the Northwestern Gulf of Mexico September 28–October 1, 2017.

<b>Name</b>	<b>Role</b>	<b>Affiliation</b>	<b>Email</b>
Emma Hickerson	Lead Scientist	FGBNMS	emma.hickerson@noaa.gov
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Rachel Sellers	Galleyhand	CPC	rachel.sellers@cpcperfoms.com
Gerry Amador	Deckhand	CPC	gerry.amador@cpcperfoms.com

**Expedition map**

**Figure 1.** Map of locations surveyed using ROV *Mohawk* during two 2017 expeditions to the Northwestern Gulf of Mexico aboard R/V *Manta* (DFH32 and DFH33).

## **Summary statistics**

### ***ROV seafloor surveys***

A total of 49 ROV dives were conducted during the two expeditions, including 12 at Elvers, nine at McGrail, eight at Parker, six at Alderdice, five at MacNeil, four at Sonnier, three at Bright, and 2 at 28 Fathom. Collectively, these ROV dives yielded a total bottom time of 48.4 h, 97 video clips, 53 recorded DVDs, 3,200 digital still photos, and 2,373 HD video screen grabs. Depth ranges explored during the ROV dives ranged between 52-209 m. A summary of all ROV dives conducted during the cruises is presented in Table 2. Summaries of all banks visited during the expedition, which includes narratives of the dive sites, dive track maps, and highlight photos is presented in Appendix 1.

### ***ROV transects***

A total of 85 seafloor transects, 5 min in duration each, were conducted during the expeditions. Transects depths ranged between 52-209 m. A summary of all ROV transects surveys conducted during the cruises is presented in Table 2.

### ***Specimen collections***

A total of 93 biological specimens and two sediment samples were collected during the expeditions, including 86 specimens that were purposely collected, as well as nine specimens that were incidentally collected when caught in ROV propellers. Specimens collected included 33 black corals, 39 octocorals, five sponges, five stony corals, one echinoderm, one green algae, one coralline algae, two bryozoans, one fish, three unidentified invertebrates, and three substrate samples. An inventory of all specimens that were collected using the ROV *Mohawk* is presented in Table 3, and Appendix 2 includes *in situ* and laboratory photos of all collected specimens

**Dive summary table****Table 1.** Summary information for the 49 dives of the ROV *Mohawk* conducted during expeditions DFH32 and 33 in the Northwestern Gulf of Mexico.

Dive number	Locality	Date (UTC)	On bottom latitude	On bottom longitude	On bottom depth (m)	Off bottom latitude	Off bottom longitude	Off bottom depth (m)	Bottom time (h:min)	Specimens collected	Number of transects	Comments
504	Sonnier	2017/09/22	28.3420	-92.4503	42	28.3401	-92.4516	50	1:12	0	3	Poor visibility deep with black coral sea fans, abundant sponges
505	Sonnier	2017/09/22	28.3484	-92.4467	60	28.3481	-92.4464	58	0:22	2	1	Poor visibility, abundant <i>Stichopathes</i> and few large gorgonians sea fans
506	Sonnier	2017/09/22	28.3498	-92.4709	48	28.3501	-92.4705	50	1:15	2	2	Dense assemblages of black corals, <i>Antipathes furcata</i> , <i>Stichopathes</i> spp., Black Coral Sea Fans, <i>Tanacetipathes</i> spp.
507	Sonnier	2017/09/22	28.3291	-92.4659	46	28.3282	-92.4654	50	0:39	1	2	Isolated block-shaped outcroppings 1-2 m relief with low relief bottom surrounding, <i>Stichopathes</i> spp., <i>Tanacetipathes</i> spp.
508	Alderdice	2017/09/22	28.0955	-92.0068	86	28.0950	-92.0062	84	0:47	8	2	<i>Swiftia</i> field with 0.5 m tall colonies, gorgonians and black coral moderate density
509	Alderdice	2017/09/22	28.0892	-92.0016	78	28.0879	-92.0007	76	0:25	0	1	Sandy with rubble, high density of <i>Nicella</i> on rubble
510	Alderdice	2017/09/23	28.0953	-91.9772	86	28.0949	-91.9780	78	1:06	2	1	Mostly soft bottom. Solitary medium relief outcropping with black colonial cup corals and stony corals. Soft Bottom-Deep Coral Habitat
511	Alderdice	2017/09/23	28.0910	-91.9863	70	28.0903	-91.9865	70	1:10	5	2	Medium to High relief CCA reef, high density of <i>Stichopathes</i> sp.
512	Alderdice	2017/09/23	28.0797	-91.9920	70	28.0792	-91.9912	69	0:38	1	2	Very high density black corals
513	Alderdice	2017/09/23	28.0731	-91.9712	93	28.0742	-91.9725	94	0:43	1	1	Isolated boulders with stony corals
514	Parker	2017/09/23	27.9462	-92.0305	75	27.9453	-92.0305	69	0:32	0	0	Algal nodule field, strong current
515	McGrail	2017/09/23	27.9512	-92.5407	122	27.9510	-92.5428	125	2:05	15	3	Dense black coral and gorgonians, abundant <i>Elatopathes abietina</i>
516	McGrail	2017/09/24	27.9620	-92.5551	132	27.9644	-92.5554	124	0:39	3	2	Pipeline. Soft bottom with rubble with small gorgonians and black corals
517	McGrail	2017/09/24	27.9658	-92.6027	58	27.9672	-92.6015	57	0:34	0	2	Algal nodule field and boulders, high density <i>Halimeda</i> and <i>Caulerpa</i> with XeMu and AgCl
518	McGrail	2017/09/24	27.9837	-92.6052	93	27.9841	-92.6043	98	0:55	2	2	Low relief, high density gorgonian and black corals
519	McGrail	2017/09/24	27.9837	-92.6214	109	27.9839	-92.6218	109	0:53	3	2	Highly eroded patch reef, abundant <i>Elatopathes</i> and <i>Paramuricea</i>
520	McGrail	2017/09/24	27.9777	-92.6230	112	27.9787	-92.6248	104	0:25	0	2	Dense rubble pavement with abundant <i>Antipathes furcata</i> and <i>Stichopathes</i> spp.

Dive number	Locality	Date (UTC)	On bottom latitude	On bottom longitude	On bottom depth (m)	Off bottom latitude	Off bottom longitude	Off bottom depth (m)	Bottom time (h:min)	Specimens collected	Number of transects	Comments
521	McGrail	2017/09/24	27.9782	-92.6309	123	27.9806	-92.6347	124	0:38	0	1	Soft bottom with isolated small rubble with <i>Stichopathes</i> and <i>A. furcata</i>
522	McGrail	2017/09/24	28.0112	-92.6297	97	28.0120	-92.6260	103	0:53	1	1	Soft bottom
523	McGrail	2017/09/24	28.0000	-92.6205	93	27.9992	-92.6181	95	1:02	1	3	High and medium relief ledges with many S02
524	Elders	2017/09/25	27.8435	-92.9382	182	27.8432	-92.9385	172	0:45	2	0	1st site for sampling <i>Distichopathes</i>
525	Elders	2017/09/25	27.8371	-92.9533	200	27.8396	-92.9532	199	0:34	0	1	Stalked crinoids, soft bottom
526	Elders	2017/09/25	27.8394	-92.9190	149	27.8401	-92.9201	153	1:04	3	2	Isolated low relief outcroppings, <i>Acanthopathes thuyoides</i> , <i>Paramuricea</i> , unid yellow/brown sponge
527	Elders	2017/09/25	27.8347	-92.9200	174	27.8361	-92.9195	139	0:49	0	2	Isolated outcroppings with dense <i>A. thuyoides</i> and <i>E. abietina</i>
528	Elders	2017/09/25	27.8384	-92.9074	120	27.8400	-92.9064	119	0:37	0	2	Dense gorgonian ( <i>C. gracilis</i> and <i>Ellisella</i> spp.) and black coral ( <i>E. abietina</i> )
529	Elders	2017/09/25	27.8412	-92.8977	113	27.8408	-92.8975	115	0:27	0	2	High relief habitat, abundant <i>Elatopathes abietina</i> , <i>Nicella</i>
530	Elders	2017/09/25	27.8485	-92.9004	149	27.8483	-92.9010	148	1:01	1	2	Low relief scattered rock outcroppings
531	Elders	2017/09/25	27.8229	-92.8886	84	27.8240	-92.8910	81	0:44	0	2	large algal nodule fields, marbled grouper congregating
532	Elders	2017/09/26	27.8064	-92.9371	209	27.8076	-92.9371	207	0:54	0	1	Soft bottom with sea robins
533	Elders	2017/09/26	27.8082	-92.8821	178	27.8095	-92.8827	173	0:45	0	1	Soft bottom
534	Elders	2017/09/26	27.8420	-92.8584	182	27.8425	-92.8589	160	0:38	0	2	Low relief outcroppings, dense assemblages of black coral sea fans and gorgonians
535	Elders	2017/09/26	27.8428	-92.8753	125	27.8427	-92.8759	117	1:17	2	2	CCA reef with dense <i>Elatopathes abietina</i> .
536	MacNeil	2017/09/29	28.0418	-93.4991	85	28.0406	-93.4997	87	1:15	2	2	Platform close to site (approximately 0.17 miles), shrimp boats in area
537	MacNeil	2017/09/29	28.0178	-93.5232	88	28.0156	-93.5187	83	1:05	0	2	Soft Bottom
538	MacNeil	2017/09/29	28.0149	-93.5188	95	27.9938	-93.5285	96	0:29	0	1	Soft Bottom, low visibility, very little biology.
539	MacNeil	2017/09/29	27.5159	-93.5288	90	28.0007	-93.4800	85	1:11	4	2	Low relief outcroppings with moderate density black corals
540	MacNeil	2017/09/29	28.0142	-93.4889	84	28.0124	-93.4887	85	1:13	0	3	Isolated outcroppings, heavily silted.
541	Parker	2017/09/30	27.9449	-92.0310	72	27.9438	-92.0316	65	0:44	0	2	2-3 cm algal nodule field, medium relief patch reef.
542	Parker	2017/09/30	27.937	-92.0359	75	27.937	-92.0364	74	0:44	2	2	Algal nodule fields with high leafy red algae

Dive number	Locality	Date (UTC)	On bottom latitude	On bottom longitude	On bottom depth (m)	Off bottom latitude	Off bottom longitude	Off bottom depth (m)	Bottom time (h:min)	Specimens collected	Number of transects	Comments
			1			5						content
543	Parker	2017/09/30	27.9227	-92.0688	122	27.9211	-92.0701	133	1:12	14	2	Large fields of <i>Paramuricea</i> spp.
544	Parker	2017/09/30	27.9187	-92.0329	126	27.9205	-92.0335	116	0:39	1	2	High relief highly eroded patch reef.
545	Parker	2017/09/30	27.9192	-92.0016	125	27.9174	-92.0016	117	1:13	1	2	Scattered med/high relief deep reef outcroppings, High density black corals and gorgonians
546	Parker	2017/09/30	27.9403	-91.9730	123	27.9415	-92.9722	112	0:45	4	2	Dense coral communities on medium/high relief reef
547	Parker	2017/09/30	27.9754	-91.9730	129	27.9741	-92.0621	117	0:43	1	2	Dense <i>A. furcata</i> on soft bottom mounds with coral rubble
548	Bright	2017/10/01	27.8521	-93.2732	142	27.8520	-93.2753	136	1:29	4	3	Medium relief patch reef, <i>Paramuricea</i> fields
549	Bright	2017/10/01	27.8464	-93.2848	147	27.8469	-93.2861	126	0:25	0	1	Mainly soft bottom low relief outcroppings
550	Bright	2017/10/01	27.8471	-93.3179	142	27.8468	-93.3202	140	1:02	1	2	Soft bottom
551	28 Fathom	2017/10/01	27.8328	-93.4164	132	27.8323	-93.4170	134	0:55	2	1	Low relief outcroppings, glass sponges
552	28 Fathom	2017/10/01	27.8448	-93.4626	124	27.8448	-93.4624	124	0:11	0	0	ROV lost power due to technical issue, dive ended.

Dive number	Locality	Date (UTC)	On bottom latitude	On bottom longitude	On bottom depth (m)	Off bottom latitude	Off bottom longitude	Off bottom depth (m)	Bottom time (h:min)	Specimens collected	Number of transects	Comments
536	MacNeil Bank	2017-09-29	28.0418	-93.4991	85	28.0406	-93.4997	87	1:15	2	2	MN02, platform on site of first drop point, deploying as close as possible (0.17 miles), on top of habitat, at least 3 shrimp boats in the general area.
537	MacNeil Bank	2017-09-29	28.0178	-93.5232	88.2	28.0156	-93.5187	83.0	1:05	0	2	Soft Bottom
538	MacNeil Bank	2017-09-29	28.0149	-93.5188	95.0	27.9938	-93.5285	96.0	0:29	0	1	Soft Bottom, low visibility, very little biology.
539	MacNeil Bank	2017-09-29	27.5159	-93.5288	90.0	28.0007	-93.4800	85.0	1:11	4	2	Low relief outcroppings with moderate density black coral and gorgonians, <i>Hypnogorgia</i> field.
540	MacNeil Bank	2017-09-29	28.0142	-93.4889	84.2	28.0124	-93.4887	85.3	1:13	0	3	Isolated outcroppings, heavily silted, DFH8-18B and <i>Hypnogorgia</i> present.
541	Parker Bank	2017-09-30	27.9449	-92.0310	72.0	27.9438	-92.0316	65.0	0:44	0	2	2-3 cm algal nodule field/medium relief patch CCA reef.
542	Parker Bank	2017-09-30	27.9371	-92.0359	75.0	27.9375	-92.0364	74.0	0:44	2	2	Agal nodule fields with high leafy red algae content.
543	Parker Bank	2017-09-30	27.9227	-92.0688	122.0	27.9211	-92.0701	133.0	1:12	14	2	Large fields of <i>Paramuricea</i> spp.
544	Parker Bank	2017-09-30	27.9187	-92.0329	125.7	27.9205	-92.0335	116.1	0:39	1	2	High relief highly eroded deep reef, high density deep coral cover.
545	Parker Bank	2017-09-30	27.9192	-92.0016	125.2	27.9174	-92.0016	117.2	1:13	1	2	Scattered med/high relief deep reef outcroppings - high density black corals and gorgonians.
546	Parker Bank	2017-09-30	27.9403	-91.9730	123.0	27.9415	-91.9722	112.0	0:45	4	2	Dense coral communities on Medium/high relief.
547	Parker Bank	2017-09-30	27.9754	-92.0621	129.0	27.9741	-92.0621	117.0	0:43	1	2	Dense <i>A. furcata</i> on soft bottom mounds with coral rubble.
548	Bright Bank	2017-10-01	27.8521	-93.2732	142.0	27.8520	-93.2753	136.0	1:29	4	3	Medium relief patch reef, <i>Paramuricea</i> fields, basket stars feeding.
549	Bright Bank	2017-10-01	27.8464	-93.2848	147.0	27.8469	-93.2861	126.0	0:25	0	1	Mainly soft bottom with low relief outcroppings.
550	Bright Bank	2017-10-01	27.8471	-93.3179	142.0	27.8468	-93.3202	139.8	1:02	1	2	Soft bottom with isolated outcroppings.
551	28 Fathom Bank	2017-10-01	27.8328	-93.4164	132.3	27.8323	-93.4170	133.6	0:55	2	1	Low relief outcroppings, few glass sponges.
552	28 Fathom Bank	2017-10-01	27.8448	-93.4626	124.0	27.8448	-93.4624	124	0:11	0	0	ROV lost power due to technical issue; dive ended.

**Transect summary table****Table 2.** Inventory of ROV transect surveys conducted during expeditions DFH 32 and DFH 33 to the Northwestern Gulf of Mexico. Each transect lasted 5 min.

Transect Number	Locality	Date	Start Time	Start Latitude	Start Longitude	Start Depth (m)	End Time	End Latitude	End Longitude	End Depth (m)
S1-T1	Sonnier	2017-09-22	9:28	28.3416	-92.4507	46	9:33	28.3415	-92.4511	43
S1_T2	Sonnier	2017-09-22	09:43	28.3411	-92.4511	37	09:48	28.3407	-92.4512	25
S1_T3	Sonnier	2017-09-22	09:56	28.3404	-92.4517	49	10:01	28.3401	-92.4516	50
S4_T4	Sonnier	2017-09-22	10:42	28.3484	-92.4467	60	10:47	28.3482	-92.4465	58
S2_T5	Sonnier	2017-09-22	11:35	28.3498	-92.4709	45	11:41	28.3501	-92.4706	49
S2_T6	Sonnier	2017-09-22	12:00	28.3500	-92.4708	52	12:05	28.3501	-92.4703	53
S3_T7	Sonnier	2017-09-22	13:25	28.3231	-92.4660	47	13:30	28.3288	-92.4657	47
S3_T8	Sonnier	2017-09-22	13:35	28.3287	-92.4656	50	13:41	28.3282	-92.4654	50
A1_T1	Alderdice	2017-09-22	16:28	28.0953	-92.0069	84	16:34	28.0952	-92.0073	82
A1_T2	Alderdice	2017-09-22	16:53	28.0950	-92.0067	84	16:58	28.0952	-92.0062	84
A7_T3	Alderdice	2017-09-22	17:49	28.0889	-92.0017	77	17:53	28.0879	-92.0008	78
A5_T4	Alderdice	2017-09-23	07:45	28.0952	-91.9771	85	07:50	28.0951	-91.9775	81
A5_T5	Alderdice	2017-09-23	09:17	28.0912	-91.9863	69	09:23	28.0908	-91.9863	69
A5_T6	Alderdice	2017-09-23	09:29	28.0906	-91.9864	71	09:34	28.0902	-91.9864	75
A6_T7	Alderdice	2017-09-23	11:00	28.0795	-91.9918	69	11:08	28.0795	-91.9911	69
A6_T8	Alderdice	2017-09-23	11:10	28.0795	-91.9909	69	11:15	28.0792	-91.9912	68
A4_T9	Alderdice	2017-09-23	12:25	28.0736	-91.9719	93	12:30	28.0739	-91.9722	92
MG4_T1	McGrail	2017-09-23	17:11	27.9513	-92.5415	117	17:16	28.9509	-92.5418	121
MG4_T2	McGrail	2017-09-23	17:23	27.9506	-92.5420	118	17:28	27.9506	-92.5421	117
MG4_T3	McGrail	2017-09-23	17:50	27.9509	-92.5426	116	17:55	27.9510	-92.5427	125
MG5_T4	McGrail	2017-09-24	07:52	27.9630	-92.5547	125	07:56	27.9636	-92.5546	124
MG5_T5	McGrail	2017-09-24	08:02	27.9636	-92.5554	124	08:07	27.9640	-92.5555	124
MG8_T6	McGrail	2017-09-24	09:31	27.9659	-92.6026	57	09:36	27.9664	-92.6020	57
MG8_T7	McGrail	2017-09-24	09:43	27.9669	-92.6019	57	09:48	27.9669	-92.6014	57
MG3_T8	McGrail	2017-09-24	10:29	27.9837	-92.6052	93	10:34	27.9840	-92.6051	93
MG3_T9	McGrail	2017-09-24	10:49	27.9842	-92.6049	96	10:54	27.9840	-92.6043	99
MG1_T10	McGrail	2017-09-24	11:48	27.9837	-92.6212	116	11:53	27.9836	-92.6218	107
MG1_T11	McGrail	2017-09-24	11:56	27.9839	-92.6219	109	12:01	27.9842	-92.6218	115
MG2_T12	McGrail	2017-09-24	13:25	27.9780	-92.6232	105	13:30	27.9782	-92.6239	102
MG2_T13	McGrail	2017-09-24	13:33	27.9784	-92.6241	103	13:38	27.9787	-92.6248	104
MG9_T14	McGrail	2017-09-24	14:22	27.9786	-92.9313	126	14:28	27.9791	-92.6321	126
MG9_T15	McGrail	2017-09-24	15:30	28.0112	-92.6293	97	15:36	28.0113	-92.6285	98
MG11_T16	McGrail	2017-09-24	16:38	28.0002	-92.6210	93	16:42	27.9999	-92.6206	92
MG11_T17	McGrail	2017-09-24	16:45	27.9999	-92.6205	92	16:50	27.9997	-92.6204	96

Transect Number	Locality	Date	Start Time	Start Latitude	Start Longitude	Start Depth (m)	End Time	End Latitude	End Longitude	End Depth (m)
MG11_T18	McGrail	2017-09-24	17:07	27.9988	-92.6192	95	17:12	27.9991	-92.6189	94
E20_T1	Elvers	2017-09-25	09:01	27.8374	-92.9532	200	09:07	27.8380	-92.9533	200
E9_T2	Elvers	2017-09-25	10:26	27.8397	-92.9194	148	10:32	27.8401	-92.9197	149
E9_T3	Elvers	2017-09-25	10:43	27.8401	-92.9199	148	10:48	27.8400	-92.9204	153
E21_T4	Elvers	2017-09-25	12:07	27.8349	-92.9199	163	12:12	27.8351	-92.9199	154
E21_T5	Elvers	2017-09-25	12:17	27.8353	-92.9199	150	12:22	27.8357	-92.9199	142
E10_T6	Elvers	2017-09-25	13:48	27.8391	-92.9076	118	13:53	27.8390	-92.9072	116
E10_T7	Elvers	2017-09-25	14:00	27.8393	-92.9071	115	14:05	27.8397	-92.9066	117
E11_T8	Elvers	2017-09-25	14:43	27.8411	-92.9877	113	14:49	27.8407	-92.8979	112
E11_T9	Elvers	2017-09-25	14:52	27.8408	-92.8977	109	14:56	27.8408	-92.8975	115
E2_T10	Elvers	2017-09-25	15:46	27.8488	-92.9009	148	15:51	27.8492	-92.9013	150
E2_T11	Elvers	2017-09-25	16:15	27.8484	-92.9017	144	16:21	27.8483	-92.9010	148
E14_T12	Elvers	2017-09-25	17:12	27.8230	-92.8886	84	17:17	27.8234	-92.8893	72
E14_T13	Elvers	2017-09-25	17:26	27.8236	-92.8896	76	17:32	27.8238	-92.8901	77
E15_T14	Elvers	2017-09-26	07:47	27.8069	-92.9371	207	07:52	27.8076	-92.9371	207
E16_T15	Elvers	2017-09-26	09:31	27.8087	-92.8823	175	09:36	27.8095	-92.8827	173
E7_T16	Elvers	2017-09-26	10:30	27.8421	-92.8584	179	10:35	27.8425	-92.8586	167
E7_T17	Elvers	2017-09-26	10:42	27.8426	-92.8587	160	10:47	27.8426	-92.8589	160
E5_T18	Elvers	2017-09-26	11:42	27.8431	-92.8757	118	11:47	27.8427	-92.8760	113
E5_T19	Elvers	2017-09-26	12:05	27.8428	-92.8762	111	12:10	27.8428	-92.8759	117
MN2-T1	MacNeil	2017-09-29	9:22	28.0416	-93.4992	85	9:27	28.0413	-93.4993	85
MN2-T2	MacNeil	2017-09-29	10:04	28.0408	-93.4995	86	10:10	28.0406	-93.4997	87
MN6-T3	MacNeil	2017-09-29	11:25	28.0165	-93.5206	85	11:30	28.0162	-93.5203	84
MN6-T4	MacNeil	2017-09-29	11:48	28.0157	-93.5192	83	11:53	28.0154	-93.5191	83
MN1-T5	MacNeil	2017-09-29	13:49	27.9941	-93.5296	96	13:54	27.9937	-93.5290	96
MN5-T6	MacNeil	2017-09-29	14:59	28.0009	-93.4796	89	15:04	28.0008	-93.4799	86
MN5-T7	MacNeil	2017-09-29	15:15	28.0008	-93.4800	86	15:20	28.0007	-93.4800	86
MN12-T8	MacNeil	2017-09-29	16:24	28.0139	-93.4891	84	16:29	28.0133	-93.4891	85
MN12-T9	MacNeil	2017-09-29	16:40	28.0127	-93.4887	84	16:45	28.0127	-93.4892	85
MN12-T10	MacNeil	2017-09-29	16:58	28.0120	-93.4899	83	17:03	28.0119	-93.4894	85
P7-T1	Parker	2017-09-30	7:40	27.9448	-92.0315	72	7:45	27.9444	-92.0319	72
P7-T2	Parker	2017-09-30	7:55	27.9441	-92.0319	68	8:00	27.9439	-92.0316	65
P2-T3	Parker	2017-09-30	8:37	27.9369	-92.0360	75	8:43	27.9371	-92.0363	75
P2-T4	Parker	2017-09-30	8:59	27.9370	-92.0364	73	9:04	27.9376	-92.0363	75
P10-T5	Parker	2017-09-30	10:05	27.9226	-92.0688	118	10:10	27.9227	-92.0695	118
P10-T6	Parker	2017-09-30	10:46	27.9218	-92.0697	128	10:51	27.9215	-92.0697	131
P17-T7	Parker	2017-09-30	12:13	27.9211	-92.0699	126	12:18	27.9187	-92.0329	126
P17-T8	Parker	2017-09-30	12:43	27.9203	-92.0334	117	12:48	27.9206	-92.0335	120

Transect Number	Locality	Date	Start Time	Start Latitude	Start Longitude	Start Depth (m)	End Time	End Latitude	End Longitude	End Depth (m)
P17-T9	Parker	2017-09-30	14:16	27.9177	-92.0010	121	14:21	27.9176	-92.0006	121
P17-T10	Parker	2017-09-30	14:37	27.9170	-92.0000	128	14:42	27.9169	-92.0004	120
P13-T11	Parker	2017-09-30	15:56	27.9402	-91.9729	116	16:01	27.9406	-91.9726	119
P13-T12	Parker	2017-09-30	16:04	27.9410	-91.9726	124	16:09	27.9416	-91.9727	112
P15-T13	Parker	2017-09-30	17:41	27.9751	-92.0622	119	17:46	27.9749	-92.0617	113
P15-T14	Parker	2017-09-30	18:03	27.9747	-92.0620	112	18:08	27.9741	-92.0621	118
B4-T1	Bright	2017-10-01	7:57	27.8512	-93.2741	135	8:02	27.8508	-93.2742	132
B4-T2	Bright	2017-10-01	8:25	27.8508	-93.2747	130	8:30	27.8509	-93.2751	128
B4-T3	Bright	2017-10-01	8:55	27.8517	-93.2757	138	9:00	27.8520	-93.2753	136
B5-T4	Bright	2017-10-01	9:57	27.8466	-93.2856	134	10:02	27.8469	-93.2861	126
B5-T5	Bright	2017-10-01	11:17	27.8472	-93.3182	138	11:22	27.8473	-93.3188	137
B5-T6	Bright	2017-10-01	11:40	27.8469	-93.3200	140	11:45	27.8468	-93.3202	140
F1-T7	28 Fathom	2017-10-01	13:13	27.8328	-93.4164	132	13:18	27.8323	-93.4166	134

**Specimen summary table****Table 3.** Inventory of specimens collected during expeditions DFH 32 and DFH 33 to the Northwestern Gulf of Mexico.

Specimen ID	Scientific Name	Date	Time	Locality	Latitude	Longitude	Depth (m)	Preservation	Destination
DFH32-505A	<i>Hypnorgia</i> sp.	2017-09-22	10:50	Sonnier	28.3481	-92.4464	58	100% EtOH	David Hicks, UTRGV
DFH32-505B	<i>Stichopathes</i> sp.	2017-09-22	N/A	Sonnier	28.3484	-92.4468	57-59	100% EtOH	Mercer Brugler, AMNH
DFH32-506A	<i>Antipathes atlantica</i>	2017-09-22	12:09	Sonnier	28.3501	-92.4706	52	100% EtOH	Mercer Brugler, AMNH
DFH32-506B	<i>Stichopathes</i> sp.	2017-09-22	N/A	Sonnier	28.3484	-92.4462	45-54	100% EtOH	Mercer Brugler, AMNH
DFH32-507A	<i>Tanacetipathes</i> sp.	2017-09-22	13:45	Sonnier	28.3282	-92.4654	50	100% EtOH	Mercer Brugler, AMNH
DFH32-508A	<i>Swiftia</i> sp.	2017-09-22	16:42	Alderdice	28.0952	-92.0070	82	100% EtOH	David Hicks, UTRGV
DFH32-508B	<i>Muricea pendula</i>	2017-09-22	17:05	Alderdice	28.0950	-92.0062	84	100% EtOH	David Hicks, UTRGV
DFH32-508C	<i>Stichopathes</i> sp.	2017-09-22	N/A	Alderdice	28.0955	-92.0068	82-86	100% EtOH	Mercer Brugler, AMNH
DFH32-508D	<i>Stichopathes</i> sp.	2017-09-22	N/A	Alderdice	28.0955	-92.0068	82-86	100% EtOH	Mercer Brugler, AMNH
DFH32-508E	<i>Stichopathes</i> sp.	2017-09-22	N/A	Alderdice	28.0955	-92.0068	82-86	100% EtOH	Mercer Brugler, AMNH
DFH32-508F	<i>Stichopathes</i> sp.	2017-09-22	N/A	Alderdice	28.0955	-92.0068	82-86	100% EtOH	Mercer Brugler, AMNH
DFH32-508G	<i>Stichopathes</i> sp.	2017-09-22	N/A	Alderdice	28.0955	-92.0068	82-86	100% EtOH	Mercer Brugler, AMNH
DFH32-508H	<i>Stichopathes</i> sp.	2017-09-22	N/A	Alderdice	28.0955	-92.0068	82-86	100% EtOH	Mercer Brugler, AMNH
DFH32-510A	<i>Tanacetipathes</i> sp.	2017-09-23	8:15	Alderdice	28.0949	-91.9780	82	100% EtOH	Mercer Brugler, AMNH
DFH32-510B	<i>Rhizopsammia</i> sp.	2017-09-23	8:35	Alderdice	28.0949	-91.9780	78	100% EtOH, dry, 10% formalin	FGBNMS
DFH32-511A	<i>Tanacetipathes</i> sp.	2017-09-23	9:49	Alderdice	28.0902	-91.9863	63	100% EtOH	Mercer Brugler, AMNH
DFH32-511B	Purple bryozoan	2017-09-23	9:59	Alderdice	28.0901	-91.9863	66	100% EtOH, dry	FGBNMS
DFH32-511C	<i>Thesea rubra</i>	2017-09-23	10:09	Alderdice	28.0903	-91.9863	66	100% EtOH	David Hicks, UTRGV
DFH32-511D	Unidentified red gorgonian	2017-09-23	10:09	Alderdice	28.0903	-91.9863	66	100% EtOH	David Hicks, UTRGV
DFH32-511E	Yellow crustose coralline alga (CCA)	2017-09-23	9:59	Alderdice	28.0901	-91.9863	66	10% formalin	UNCW
DFH32-512A	<i>Plumapathes pennacea</i>	2017-09-23	9:40	Alderdice	28.0792	-91.9912	68.8	100% EtOH, dry, 10% formalin	Mercer Brugler, AMNH
DFH32-513A	<i>Madracis</i> sp. (S02)	2017-09-23	12:44	Alderdice	28.0742	-91.9725	93.7	100% EtOH	FGBNMS

Specimen ID	Scientific Name	Date	Time	Locality	Latitude	Longitude	Depth (m)	Preservation	Destination
DFH32-515A	<i>Elatopathes abietina</i>	2017-09-23	18:04	McGrail	27.9510	-92.5428	125	100% EtOH	Mercer Brugler, AMNH
DFH32-515B	<i>Paramuricea</i> spp.	2017-09-23	18:04	McGrail	27.9510	-92.5428	125	100% EtOH	FGBNMS
DFH32-515C	<i>Elatopathes abietina</i>	2017-09-23	18:04	McGrail	27.9510	-92.5428	125	100% EtOH	Mercer Brugler, AMNH
DFH32-515D	Threadnose bass	2017-09-23	18:04	McGrail	27.9510	-92.5428	125	100% EtOH	David Hicks, UTRGV
DFH32-515E	<i>Nicella</i> sp.	2017-09-23	18:04	McGrail	27.9510	-92.5428	125	100% EtOH	David Hicks, UTRGV
DFH32-515F	<i>Nicella</i> sp.	2017-09-23	18:04	McGrail	27.9510	-92.5428	125	100% EtOH	David Hicks, UTRGV
DFH32-515G	<i>Chironephthya caribaea</i>	2017-09-23	18:04	McGrail	27.9510	-92.5428	125	100% EtOH	David Hicks, UTRGV
DFH32-515H	<i>Chironephthya caribaea</i>	2017-09-23	18:04	McGrail	27.9510	-92.5428	125	100% EtOH	David Hicks, UTRGV
DFH32-515I	<i>Anthomastus robusta</i>	2017-09-23	18:04	McGrail	27.9510	-92.5428	125	100% EtOH	David Hicks, UTRGV
DFH32-515J	<i>Anthomastus robusta</i>	2017-09-23	18:04	McGrail	27.9510	-92.5428	125	100% EtOH	David Hicks, UTRGV
DFH32-515K	<i>Anthomastus robusta</i>	2017-09-23	18:04	McGrail	27.9510	-92.5428	125	100% EtOH	David Hicks, UTRGV
DFH32-515L	<i>Paramuricea</i> cf. <i>bayeri</i>	2017-09-23	18:04	McGrail	27.9510	-92.5428	125	100% EtOH	David Hicks, UTRGV
DFH32-515M	<i>Nicella</i> sp.	2017-09-23	18:04	McGrail	27.9510	-92.5428	125	100% EtOH	David Hicks, UTRGV
DFH32-515N	White Sponge	2017-09-23	18:04	McGrail	27.9510	-92.5428	125	100% EtOH	FGBNMS
DFH32-515O	Rock	2017-09-23	18:04	McGrail	27.9510	-92.5428	125	Dry	Sean Gulick, University of Texas (UT)
DFH32-516A	<i>Muricea pendula</i>	2017-09-24	8:10	McGrail	27.9642	-92.5554	123.9	100% EtOH	David Hicks, UTRGV
DFH32-516B	Solitary cup coral	2017-09-24	8:10	McGrail	27.9642	-92.5554	123.9	100% EtOH	FGBNMS
DFH32-516C	Rock	2017-09-24	8:10	McGrail	27.9642	-92.5554	123.9	Dry	Sean Gulick, University of Texas (UT)
DFH32-518A	<i>Tanacetipathes</i> sp.	2017-09-24	10:35	McGrail	27.9839	-92.6051	93.1	100% EtOH	Mercer Brugler, AMNH
DFH32-518B	<i>Callogorgia gracilis</i>	2017-09-24	11:01	McGrail	27.9841	-92.6042	98	100% EtOH	David Hicks, UTRGV
DFH32-519A	<i>Elatopathes abietina</i>	2017-09-24	12:05	McGrail	27.9839	-92.6218	109	100% EtOH	Mercer Brugler, AMNH
DFH32-519B	<i>Caliacis</i> sp.	2017-09-24	12:18	McGrail	27.9839	-92.6218	109	100% EtOH	David Hicks, UTRGV
DFH32-519C	<i>Ellisella</i> sp.	2017-09-24	12:19	McGrail	27.9839	-92.6218	109	100% EtOH	David Hicks, UTRGV
DFH32-522A	Dark orange gorgonian	2017-09-24	15:39	McGrail	28.0113	-92.6286	97.5	100% EtOH	Andrew Schuler, DSC RTP
DFH30-523A	<i>Ellisella barbadensis</i>	2017-09-24	17:27	McGrail	27.9994	-92.6187	94.9	100% EtOH	David Hicks, UTRGV

Specimen ID	Scientific Name	Date	Time	Locality	Latitude	Longitude	Depth (m)	Preservation	Destination
DFH32-524A	<i>Distichopathes</i> sp.	2017-09-25	7:56	Elvers	27.8434	-92.9384	172	100% EtOH	Mercer Brugler, AMNH
DFH32-524B	<i>Distichopathes</i> sp.	2017-09-25	8:07	Elvers	27.8433	-92.9386	172	100% EtOH	Mercer Brugler, AMNH
DFH32-526A	<i>Distichopathes</i> sp.	2017-09-25	10:35	Elvers	27.8401	-92.9197	148	100% EtOH	Mercer Brugler, AMNH
DFH32-526B	Plexauridae (G04)	2017-09-25	10:53	Elvers	27.8400	-92.9203	154	100% EtOH	Andrew Schuler, DSC RTP
DFH32-526C	<i>Acanthopathes</i> cf. <i>thyoides</i>	2017-09-25	11:08	Elvers	27.8400	-92.9203	153	100% EtOH	Mercer Brugler, AMNH
DFH32-530A	Yellow gorgonian	2017-09-25	16:00	Elvers	27.8487	-92.9015	147	100% EtOH	Andrew Schuler, DSC RTP
DFH32-535A	Green dot algae	2017-09-25	12:01	Elvers	27.8428	-92.8762	111	10% formalin, dry	FGBNMS
DFH32-535B	<i>Callogorgia gracilis</i>	2017-09-25	12:01	Elvers	27.8428	-92.8762	111	100% EtOH	David Hicks, UTRGV
DFH33-536A	<i>Muricea pendula</i>	2017-09-29	9:39	MacNeil	28.0410	-93.4993	86	95% EtOH	David Hicks, UTRGV
DFH33-536B	<i>Antipathes</i> sp. with zoanthids	2017-09-29	9:54	MacNeil	28.0408	-93.4995	86	100% EtOH	FGBNMS
DFH33-537A	Plexauridae (DFH8-18B)	2017-09-29	11:41	MacNeil	28.0161	-93.5197	84	95% EtOH	David Hicks, UTRGV/Andrew Schuler, NCCOS
DFH33-537B	<i>Stichopathes</i> sp.	2017-09-29	12:00	MacNeil	N/A	N/A		100% EtOH, RNA later, dry	Mercer Brugler, AMNH
DFH33-539A	<i>Hypnorgia</i> sp.	2017-09-29	15:08	MacNeil	28.0080	-93.4799	86	95% EtOH	David Hicks, UTRGV
DFH33-539B	<i>Ellisella</i> sp.	2017-09-29	15:24	MacNeil	28.0074	-93.4800	86	95% EtOH	David Hicks, UTRGV
DFH33-539C	<i>Stichopathes</i> sp.	2017-09-29	15:35	MacNeil	28.0075	-93.4801	86	100% EtOH, RNA later	Mercer Brugler, AMNH
DFH33-539D	<i>Antipathes furcata</i>	2017-09-29	15:51	MacNeil	28.0075	-93.4801	85	100% EtOH, RNA later, dry	Mercer Brugler, AMNH/Smithsonian
DFH33-542A	<i>Porites</i> sp. (SP24)	2017-09-30	8:49	Parker	27.9370	-92.0364	73	100% EtOH	FGBNMS
DFH33-542B	<i>Ellisella</i> sp.	2017-09-30	8:49	Parker	27.9370	-92.0364	73	95% EtOH	David Hicks, UTRGV
DFH33-543A	Plexauridae (Unidentified orange)	2017-09-30	10:14	Parker	27.9227	-92.0695	118	95% EtOH	David Hicks, UTRGV
DFH33-543B	<i>Elatopathes</i> sp. (white)	2017-09-30	10:18	Parker	27.9227	-92.0694	118	100% EtOH, RNA later, dry	Mercer Brugler, AMNH/Smithsonian
DFH33-543C	<i>Elatopathes</i> sp. (green)	2017-09-30	10:24	Parker	27.9228	-92.0695	118	100% EtOH, RNA later, dry	Mercer Brugler, AMNH/Smithsonian
DFH33-543D	<i>Tanacetipathes</i> sp.	2017-09-30	10:32	Parker	27.9226	-92.0695	123	100% EtOH, RNA later, dry	Mercer Brugler, AMNH/Smithsonian
DFH33-543E	Unidentified pink/yellow gorgonian	2017-09-30	11:04	Parker	27.9211	-92.0701	133	95% EtOH	Andrew Schuler, DSC RTP
DFH33-543F	Unidentified crab	2017-09-30	11:04	Parker	27.9211	-92.0701	133	100% EtOH	FGBNMS
DFH33-543G	<i>Elatopathes</i> sp.	2017-09-30	11:04	Parker	27.9211	-92.0701	133	100% EtOH, RNA	Mercer Brugler, AMNH/Smithsonian

Specimen ID	Scientific Name	Date	Time	Locality	Latitude	Longitude	Depth (m)	Preservation	Destination
								later, dry	
DFH33-543H	<i>Nicella</i> sp.	2017-09-30	11:04	Parker	27.9211	-92.0701	133	95% EtOH	David Hicks, UTRGV
DFH33-543I	<i>Nicella</i> sp.	2017-09-30	11:04	Parker	27.9211	-92.0701	133	95% EtOH	David Hicks, UTRGV
DFH33-543J	<i>Nicella</i> sp.	2017-09-30	11:04	Parker	27.9211	-92.0701	133	95% EtOH	David Hicks, UTRGV
DFH33-543K	<i>Nicella</i> sp.	2017-09-30	11:04	Parker	27.9211	-92.0701	133	95% EtOH	David Hicks, UTRGV
DFH33-543L	<i>Nicella</i> sp.	2017-09-30	11:04	Parker	27.9211	-92.0701	133	95% EtOH	David Hicks, UTRGV
DFH33-543M	<i>Nicella</i> sp.	2017-09-30	11:04	Parker	27.9211	-92.0701	133	95% EtOH	David Hicks, UTRGV
DFH33-543N	<i>Nicella</i> sp.	2017-09-30	11:04	Parker	27.9211	-92.0701	133	95% EtOH	David Hicks, UTRGV
DFH33-544a	White stony coral	2017-09-30	12:25	Parker	27.9187	-92.0329	126	100% EtOH	FGBNMS
DFH33-544B	<i>Elatopathes</i> sp. (green)	2017-09-30	12:52	Parker	27.9205	-92.0336	116	100% EtOH, RNA later, dry	Mercer Brugler, AMNH/Smithsonian
DFH33-545A	<i>Elatopathes</i> sp.	2017-09-30	14:56	Parker	27.9172	-92.0017	117	100% EtOH, RNA later, dry	Mercer Brugler, AMNH/Smithsonian
DFH33-546A	White branching <i>Elatopathes abietina</i>	2017-09-30	16:15	Parker	27.9416	-91.9727	112	100% EtOH, RNA later, dry	Mercer Brugler, AMNH/Smithsonian
DFH33-546B	Unidentified sponge (I09)	2017-09-30	16:15	Parker	27.9416	-91.9727	112	100% EtOH	FGBNMS
DFH33-546C	Pink gorgonian	2017-09-30	16:29	Parker	27.9414	-91.9722	112	100% EtOH, 95% EtOH	Andrew Shuler, NCCOS
DFH33-546D	Unidentified invertebrate off DFH33-546A	2017-09-30	16:15	Parker	27.9416	-91.9727	112	100% EtOH	FGBNMS
DFH33-547A	Coral rubble	2017-09-30	17:53	Parker	27.9747	-92.0619	112	Dry	FGBNMS
DFH33-548A	Plexauridae (G08)	2017-10-01	8:06	Bright	27.8507	-93.2745	131	100% EtOH, 95% EtOH	David Hicks, UTRGV/Andrew Shuler, NCCOS
DFH33-548B	<i>Paramuricea</i> sp.	2017-10-01	8:18	Bright	27.8508	-93.2747	130	95% EtOH	David Hicks, UTRGV
DFH 33-548C	<i>Elatopathes abietina</i>	2017-10-01	8:46	Bright	27.8517	-93.2755	135	100% EtOH, RNA later, dry	Mercer Brugler, AMNH/Smithsonian
DFH33-548D	Basket star	2017-10-01	8:06	Bright	27.8507	-93.2745	131	100% EtOH	FGBNMS
DFH 33-550A	Unidentified invertebrate (I09)	2017-10-01	11:08	Bright	27.8472	-93.3182	138	100% EtOH	FGBNMS
DFH33-551A	Glass sponge	2017-10-01	13:42	28 Fathom	27.8323	-93.4170	134	100% EtOH	FGBNMS
DFH33-551B	<i>Nicella</i> sp.	2017-10-01	~13:30	28 Fathom	27.8323	-93.4170	129-134	95% EtOH	David Hicks, UTRGV

### **Acknowledgements**

We would like to thank the National Marine Sanctuary Foundation for providing support for the ROV *Mohawk*. Special thanks to the ROV pilots Lance Horn, Jason White, and Eric Glidden, who exhibited meticulous skills in operating the ROV and patience to accommodate our requests. Thanks to DSCRTP for funding, the guidance in developing plans for this cruise, preparing this document, and the onboard assistance. In addition, we thank the crew of the NOAA Ship *R/V Manta* for their hard work and all scientists and volunteers who assisted with operations during the cruise. The expeditions were funded in part by NOAA's Deep Sea Coral Research and Technology Program through the Southeast Deep Coral Initiative, the Office of National Marine Sanctuaries, and the National Marine Sanctuary Foundation. The scientific results and conclusions, as well as any views or opinions expressed herein, are those of the authors and do not necessarily reflect the views of NOAA nor the Department of Commerce.

### Appendix 1: Dive Site Summaries

The following section provides general summaries about the observations made at each bank visited during the DFH32 and 33 expeditions. These summaries do not include a complete list of species observed during the ROV dives and transects. Complete benthic colony counts will be conducted as part of post-cruise video analyses that will be conducted, and submitted to NOAA's National Database of Deep Sea Corals and Sponges

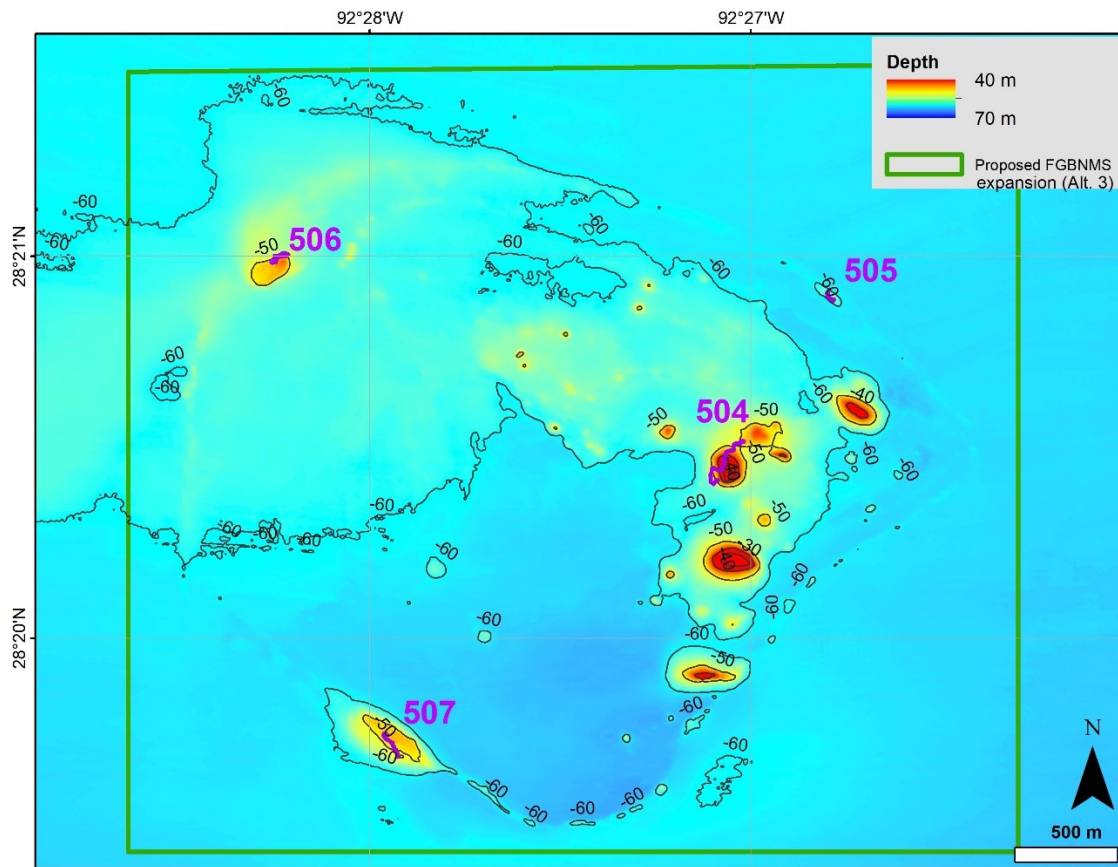
#### Sonnier Bank

**Date(s):** September 22, 2017

**Dive numbers:** 504-507

**Depth ranges:** 37-60 m

Located approximately 137 nm southeast of Galveston, Texas, Sonnier Bank was the first site to be visited on the DFH 32 expedition. Four ROV dives were conducted around this feature, during which a total of eight transects were conducted. Dense assemblages of *Antipathes furcata*, *Stichopathes* spp., black coral sea fans, and *Tanacetipathes* spp. were observed amid soft bottom, rock rubble habitats (dives 504 & 505) and isolated 1-2 m rock outcroppings (dives 506 & 507). The ROV encountered low visibility conditions around the soft bottom sites at this bank, making species identification difficult in some situations. The team collected five specimens during these dives, which included four black coral species and one gorgonian.



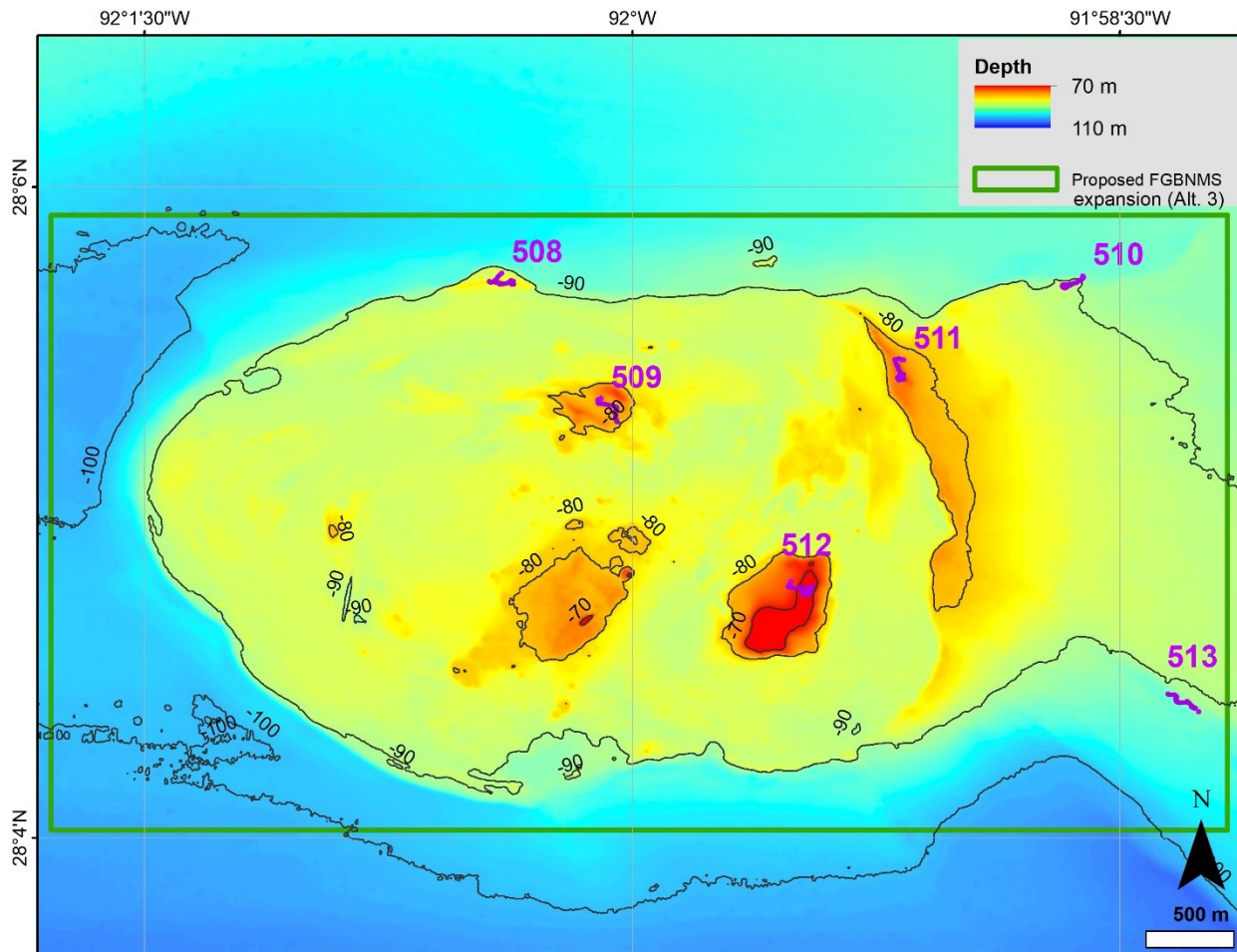
Map showing dive tracks of four ROV dives conducted at Sonnier Bank.



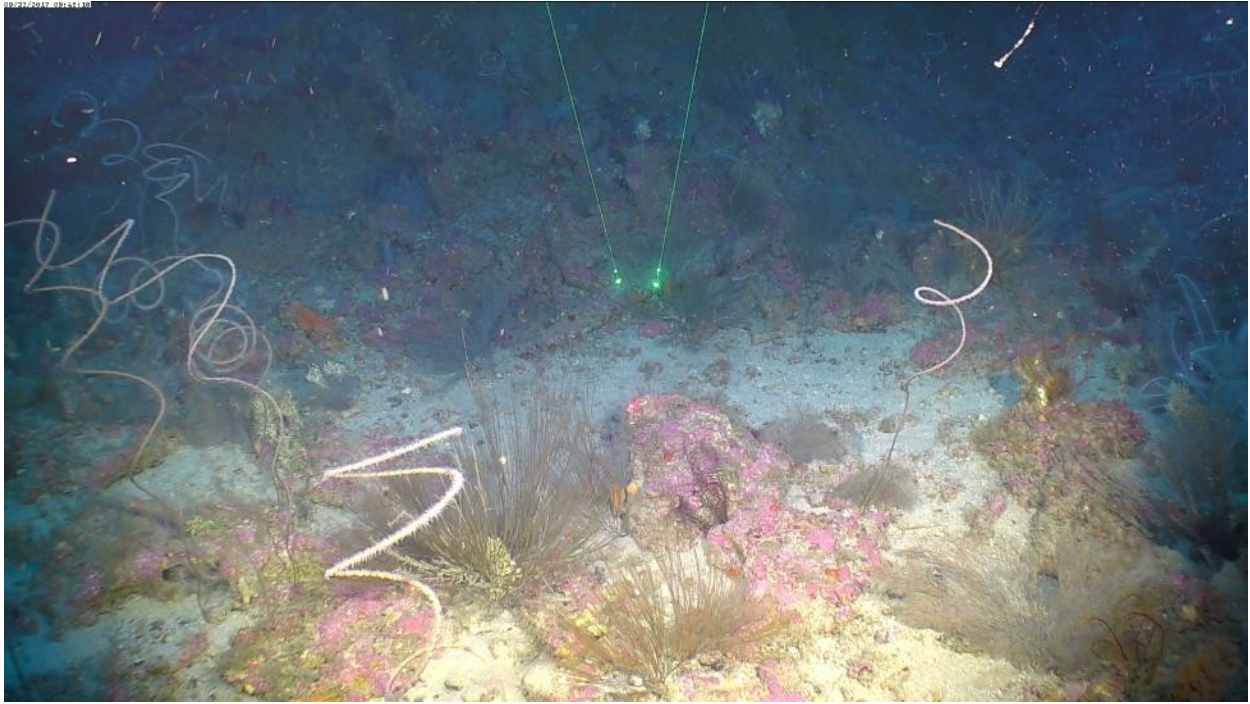
Highlight image showing whip corals, encrusting sponges, and *Hypnogorgia* sp. taken during Dive 507 at Sonnier Bank.

**Alderdice Bank****Date(s):** September 22-23, 2017**Dive numbers:** 508-513**Depth ranges:** 68-94 m

This bank sits roughly 29 nm to the southeast of Sonnier Bank. Six dives were conducted at this bank during the afternoon of the first day of operations. Over the course of the afternoon and the following day, nine transects were completed on bottom. Habitats ranged from soft bottom with eroded patch reef to high-relief CCA reef and isolated boulders. Dense black coral assemblages, stony corals, and *Swiftia* spp. were observed on these dives, as well as an unidentified black colonial cup coral species resembling *Rhizopsammia* sp. which were collected during Dive 510. A total of 17 samples were collected at Alderdice; scientists collected four gorgonians, nine black corals, one cup coral, one bryozoan, one CCA, and one stony coral (S02) for analysis (Figures 12-21).



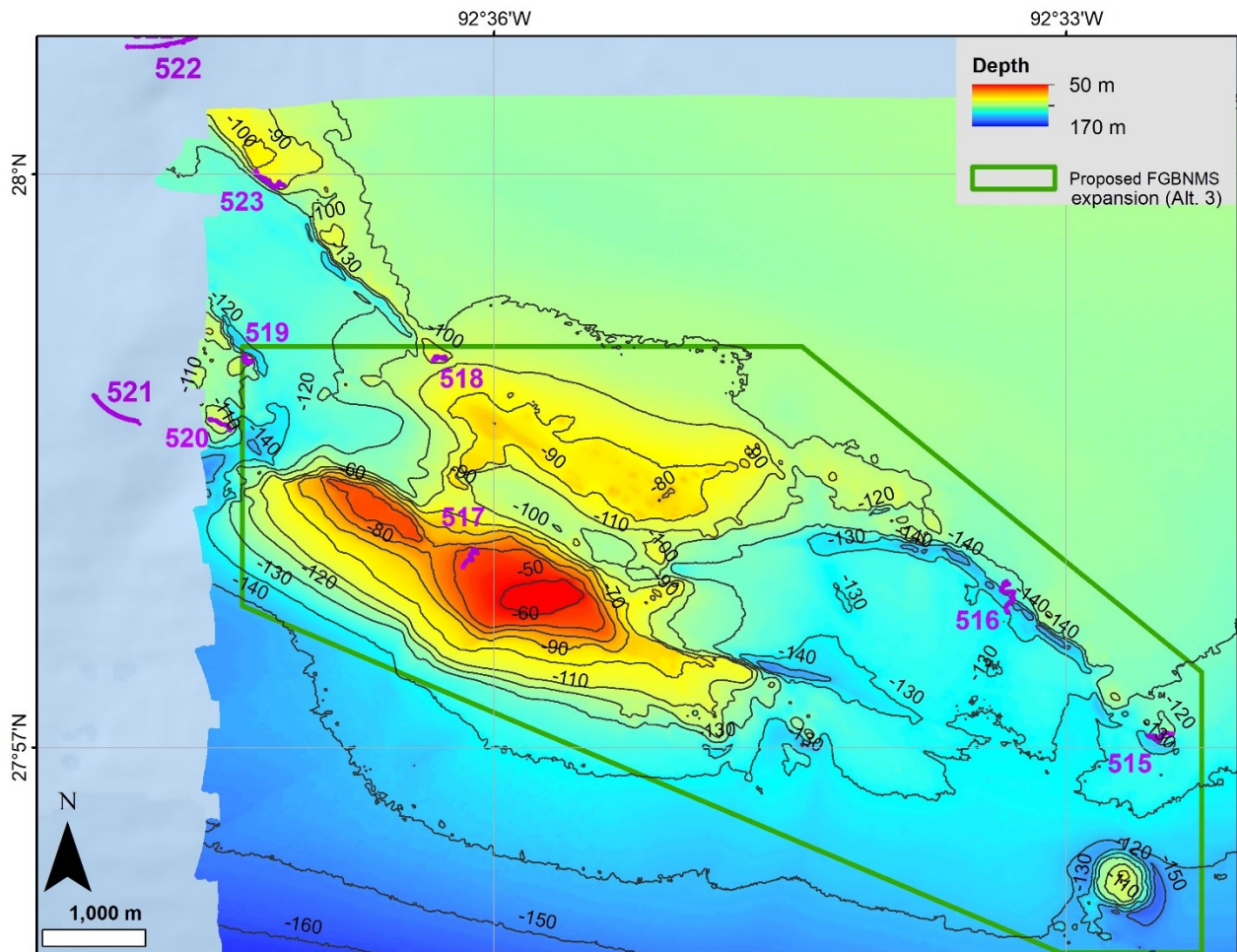
Map showing dive tracks of six ROV dives conducted at Alderdice Bank.



Highlight image showing *Antipathes furcata*, *Stichopathes* spp., and CCA on low relief patch reef taken during Dive 511 at Alderdice Bank. Lasers are 10 cm apart.

**McGrail Bank****Date(s):** September 23-24, 2017**Dive numbers:** 515-523**Depth ranges:** 57-132 m

Nine dives were completed at this bank, which is located approximately 30 nm West of Parker Bank. Abundant *Elatopathes abietina*, branching white stony corals (S02), black coral sea fans, and *Halimeda* spp. algae were encountered during the 18 transects conducted at this location. Habitats explored on this bank varied greatly; fine sediment soft bottom (Dives 515, 516, 521, & 522), algal nodules (517), low- to medium-relief patch reef (Dives 518 & 519), dense rubble (Dive 520), and high-relief outcroppings were all encountered on McGrail. Scientists collected 26 samples from this bank, including four black corals, 13 gorgonians, one fish, four sponges, two rocks, and two cup coral species.



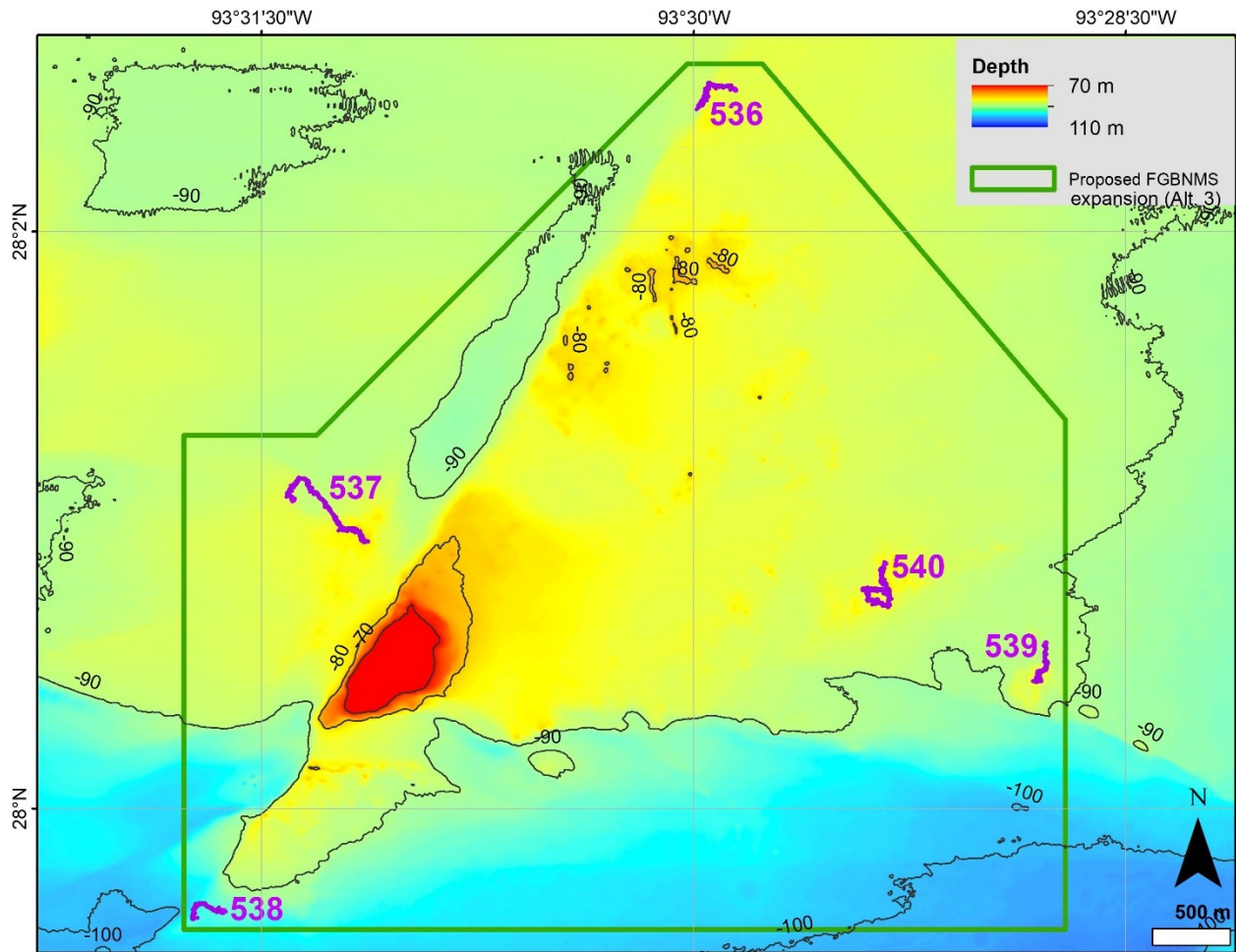
Map showing dive tracks of eight ROV dives conducted at MacGrail Bank.



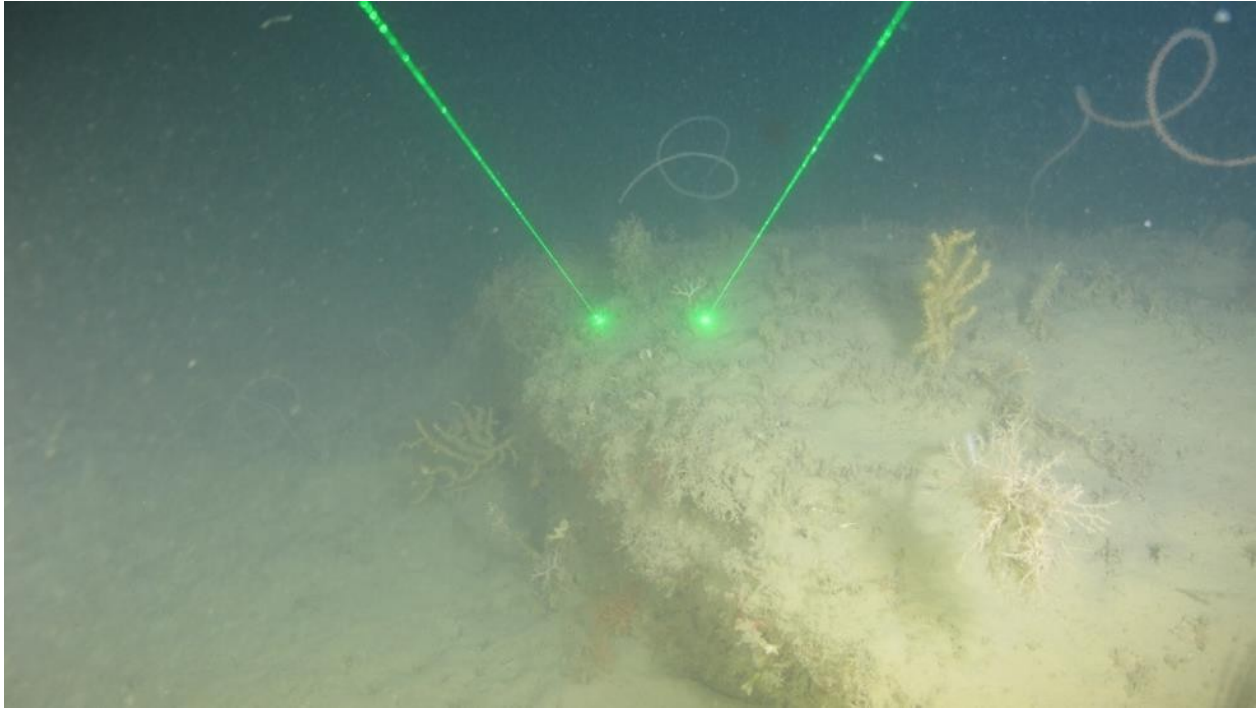
Highlight image showing *Callogorgia gracillis* and black coral sea fans amid abundant Threadnose Bass and Atlantic Creolefish on a rocky outcropping at McGrail Bank surveyed on Dive 518. Lasers are 10 cm apart.

**MacNeil Bank****Date(s):** September 29, 2017**Dive numbers:** 536-540**Depth ranges:** 81-95 m

Located approximately 102 nautical miles southeast of Galveston, Texas, MacNeil Bank was the first location to be visited during the DFH33 cruise. Five ROV dives were conducted on this bank that included a total of 10 y transects. Abundant *Stichopathes* spp., *Muricea pendula*, and few unidentified gorgonian species were observed on the soft, rubble-filled substrate (Dives 536-538) and low-relief outcroppings (Dives 539-540) at this site. On bottom, low visibility was encountered on some of these dives making it difficult for some benthic species to be identified and made sampling particularly challenging.



Map showing dive tracks of five ROV dives conducted at MacNeil Bank.



Highlight image showing *Stichopathes* spp. and unidentified gorgonian G04 (sample DFH32-526B) on low-relief silt-covered habitat on dive 539 at MacNeil Bank. Lasers are 10 cm apart.

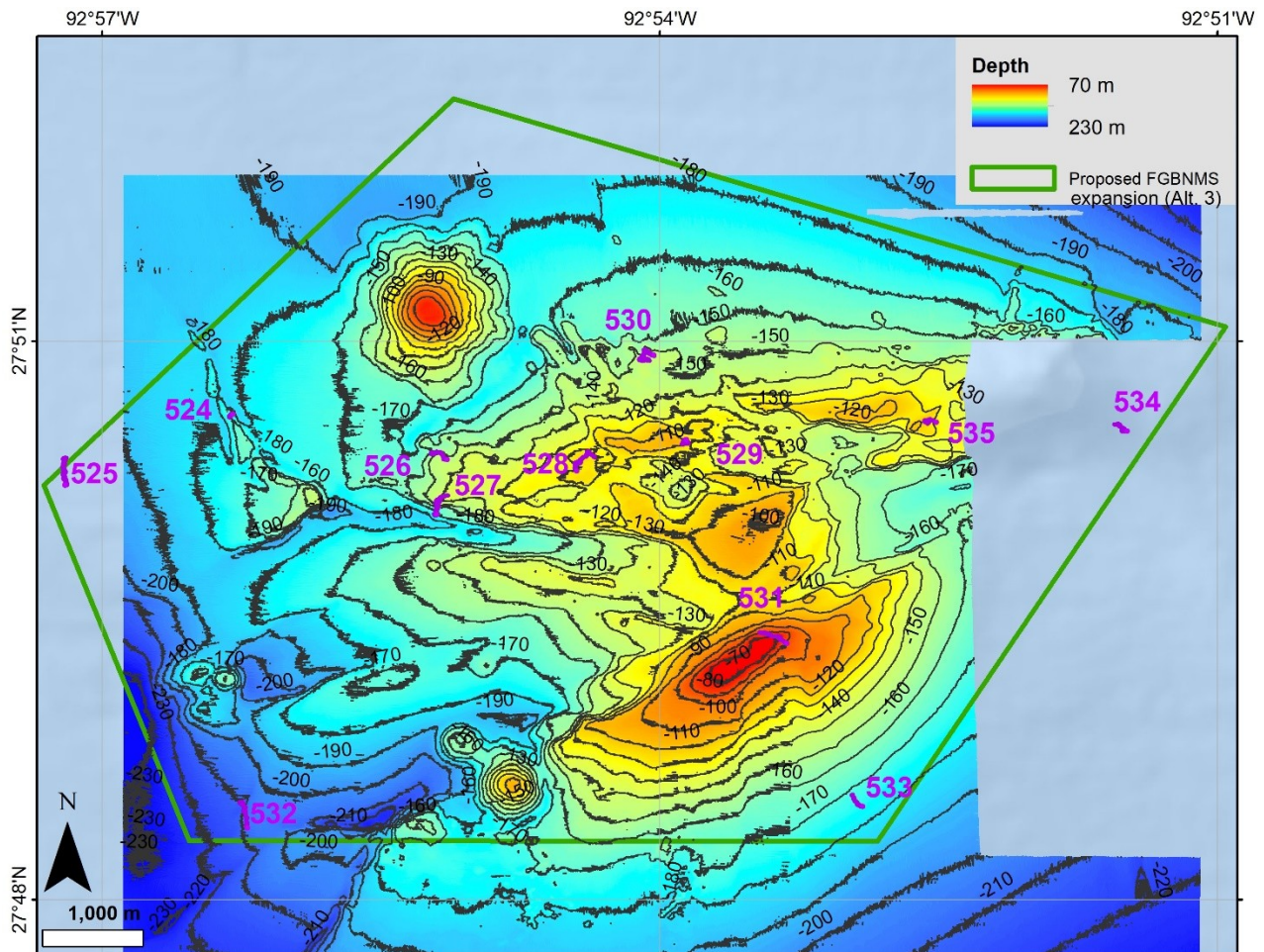
## Elvers Bank

**Date(s):** September 25-26, 2017

**Dive numbers:** 524-535

**Depth ranges:** 81-211 m

The remainder of this expedition was spent exploring this bank located about 19 nm southwest of McGrail. The first dive at Elvers was dedicated to the collection of *Distichopathes* spp. specimens, the first known living samples collected in the Gulf of Mexico. Nineteen transects were completed during these operations. Dense assemblages of *Elatopathes abietina*, *Acanthopathes thuyoides*, *Callogorgia gracilis*, *Ellisella* spp., and branching white stony corals were observed during the 19 transects completed here. Habitats encountered ranged from soft bottom (Dives 525-528, 530, 532-535), to low-relief patch reef (Dive 524) to high-relief (approx. 4m) rocky outcroppings (Dive 529).



Map showing dive tracks of twelve ROV dives conducted at Elvers Bank.



Highlight image showing *Callogorgia gracillis*, *Nicella* spp. sea whips, and *Chironephtya caribaea* taken on Dive 535 at Elvers Bank. Lasers are 10 cm apart.

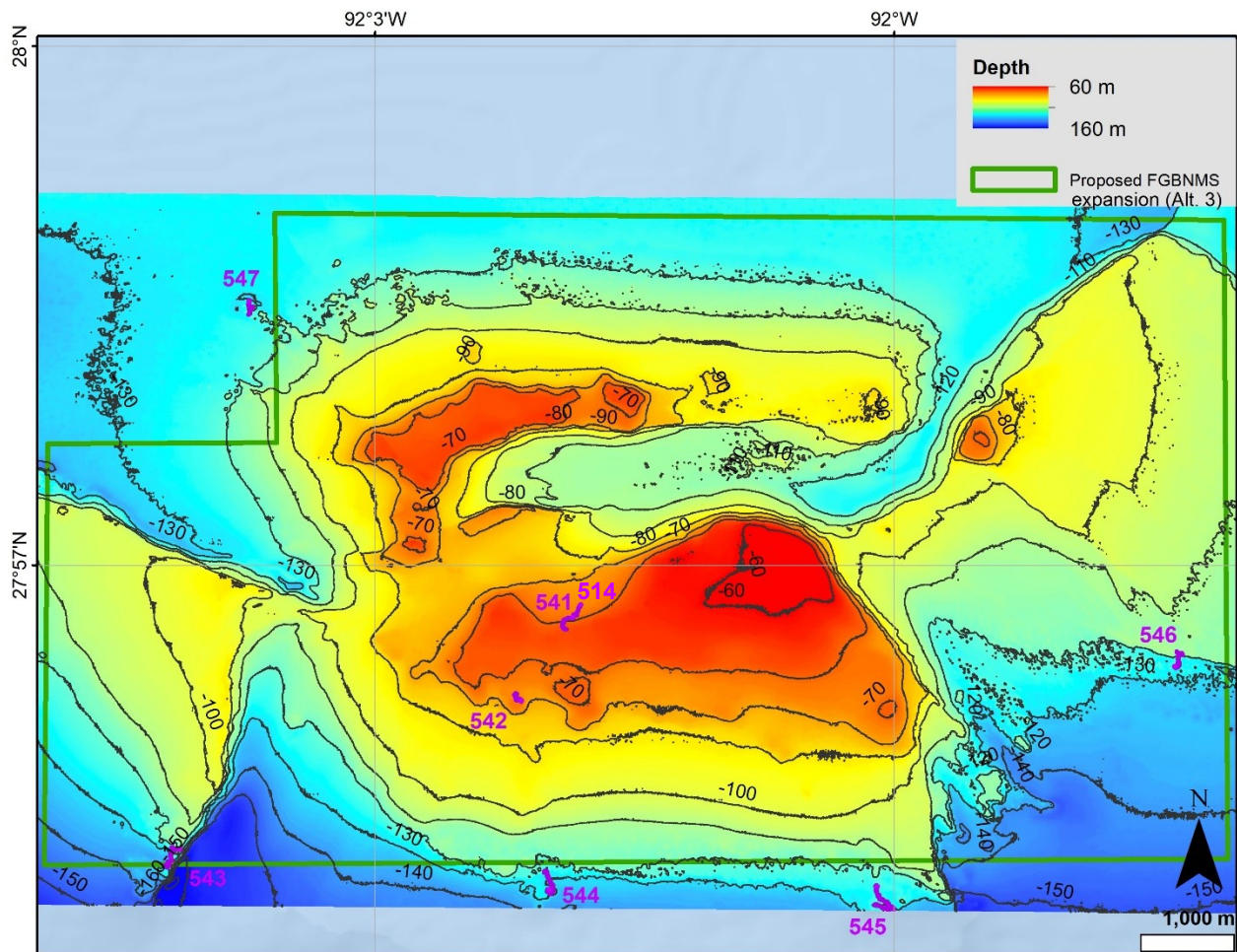
## Parker Bank

**Date(s):** September 23 & 30, 2017

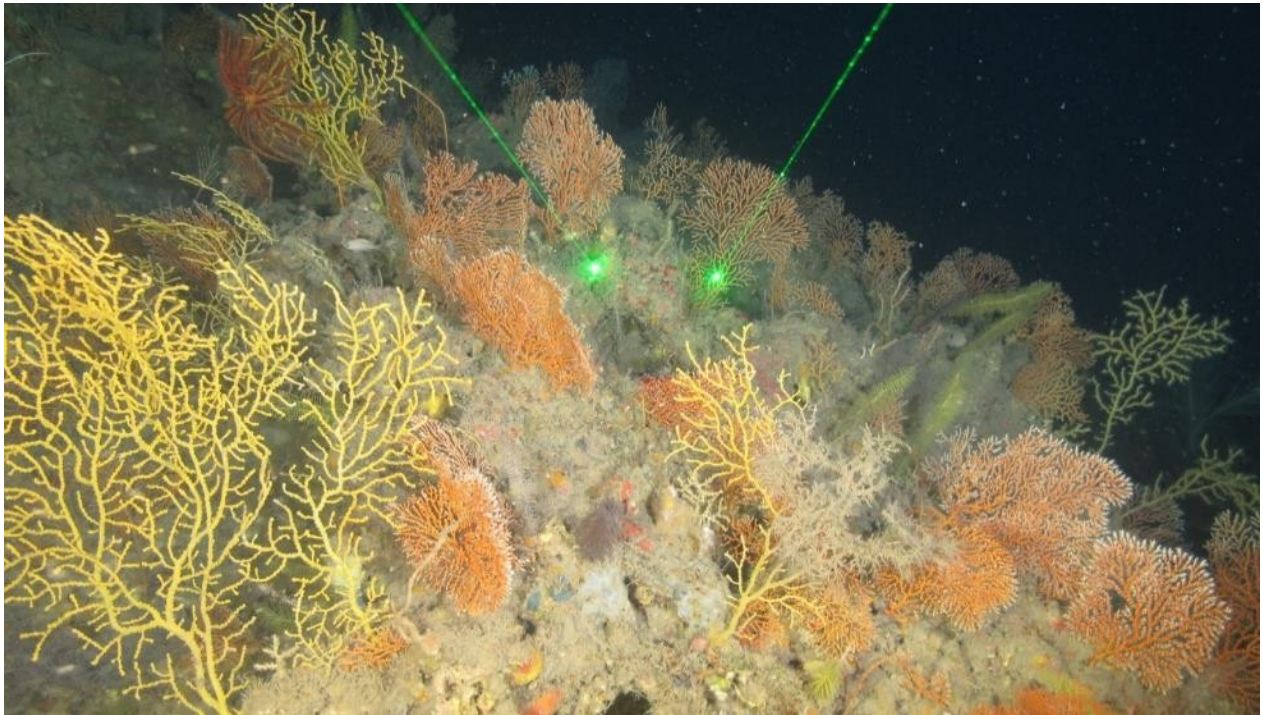
**Dive numbers:** 514, 541-547

**Depth ranges:** 66-132 m

This feature is located approximately 79 nautical miles East of MacNeil Bank. After attempts to survey Parker the previous week were failed because of heavy currents, seven dives and 14 transects were successfully conducted here during DFH33. Habitats observed here included algal nodules on low to medium patch reef habitat inhabited by abundant black coral sea fans and red leafy algae (Dives 541 & 542), soft bottom with many *Paramuricea* spp. and *Elatopathes abietina* (Dives 543 & 547), and high-relief rocky outcroppings with dense black coral and gorgonian communities (Dives 544-546).



Map showing dive tracks of seven ROV dives conducted at Parker Bank. Note that the tracks of Dive 541 and 514 overlapped.



Highlight image showing abundant *Nicella* spp., *Paramuricea* spp., and *Elatopathes abietina* on the deep coral habitat taken on dive 545 at Parker Bank. Lasers are 10 cm apart.

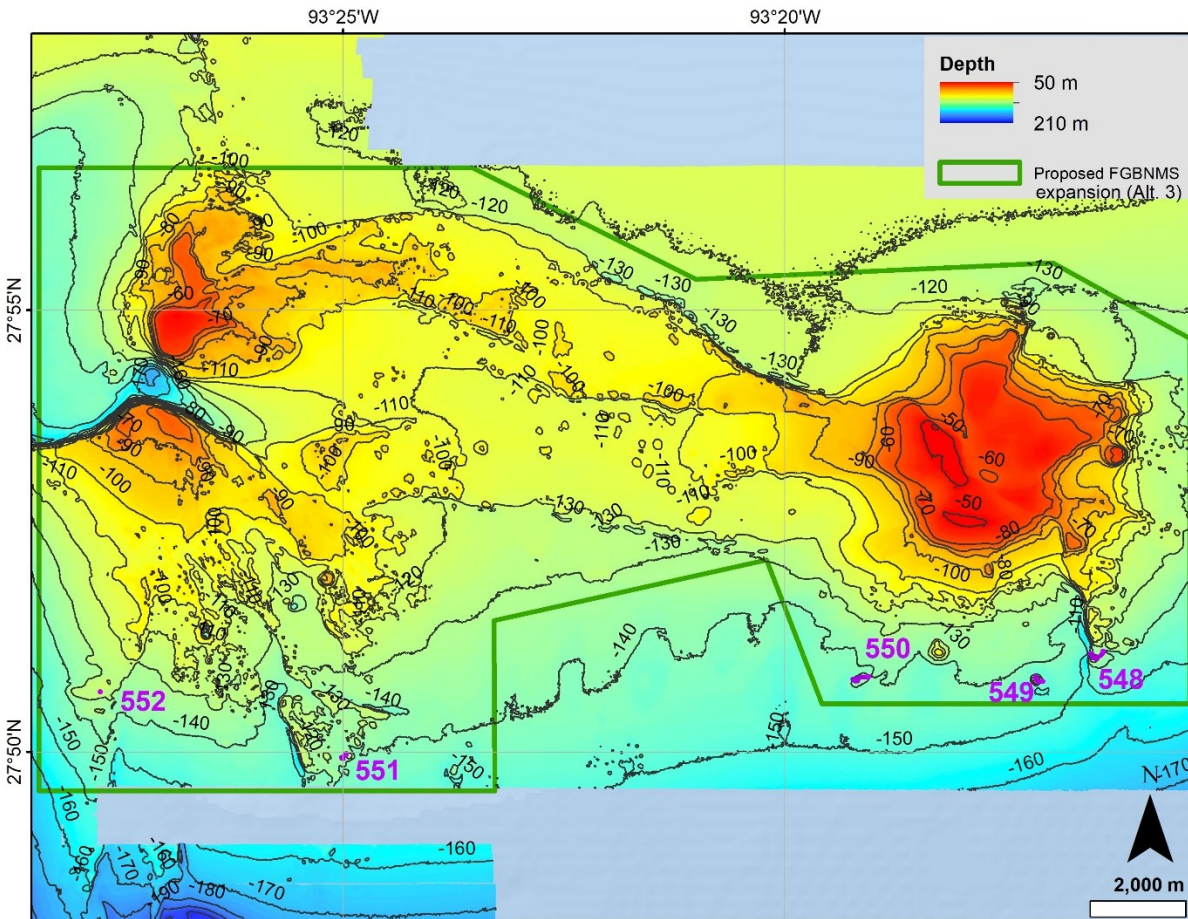
## Bright Bank Complex (Bright Bank and 28 Fathom Bank)

**Date(s):** October 1, 2017

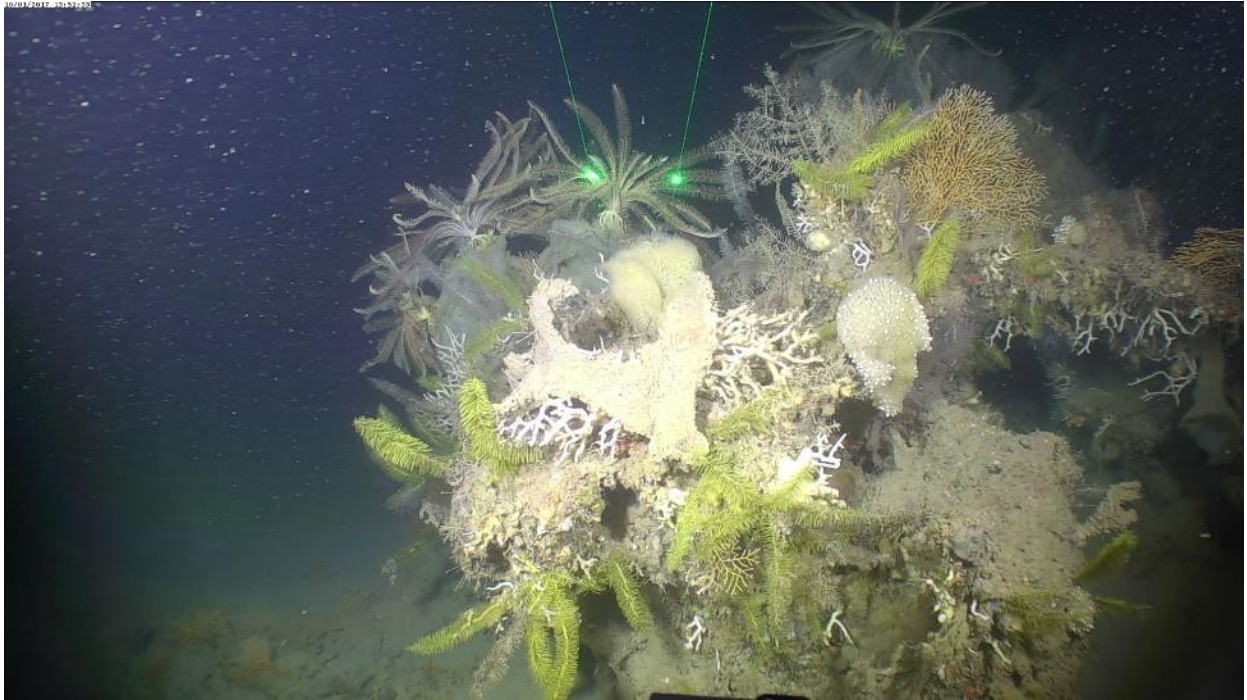
**Dive numbers:** 548-552

**Depth ranges:** 124-147 m

Approximately 72 nautical miles to the West of Parker Bank, the Bright Bank Complex was the final locality explored on expedition DFH33. Though typically referred to under one name, this complex includes three features: Bright Bank, Rankin Bank, and 28 Fathom Bank. Following the last dives at Parker Bank, the still photo camera mounted on the ROV malfunctioned, making it inoperable for the remainder of the cruise. However, the HD video recorder's frame grab capabilities enabled scientists to capture still imagery. A total of three dives and six transects were conducted on Bright Bank. Highlight observations included fields of *Paramuricea* spp. covered in basket stars and *Elatopathes abietina* on soft bottom habitat with isolated medium-relief outcroppings. The last two dives (Dives 551-552) were conducted on 28 Fathom Bank. During Dive 552, power to the ROV was lost due to a technical malfunction and the dive was ended after just 11 minutes. On Dive 551, soft bottom habitat with isolated low-relief outcroppings covered in dense assemblages of *Nicella* spp., *Elatopathes abietina*, abundant crinoids, and few glass sponges were observed.



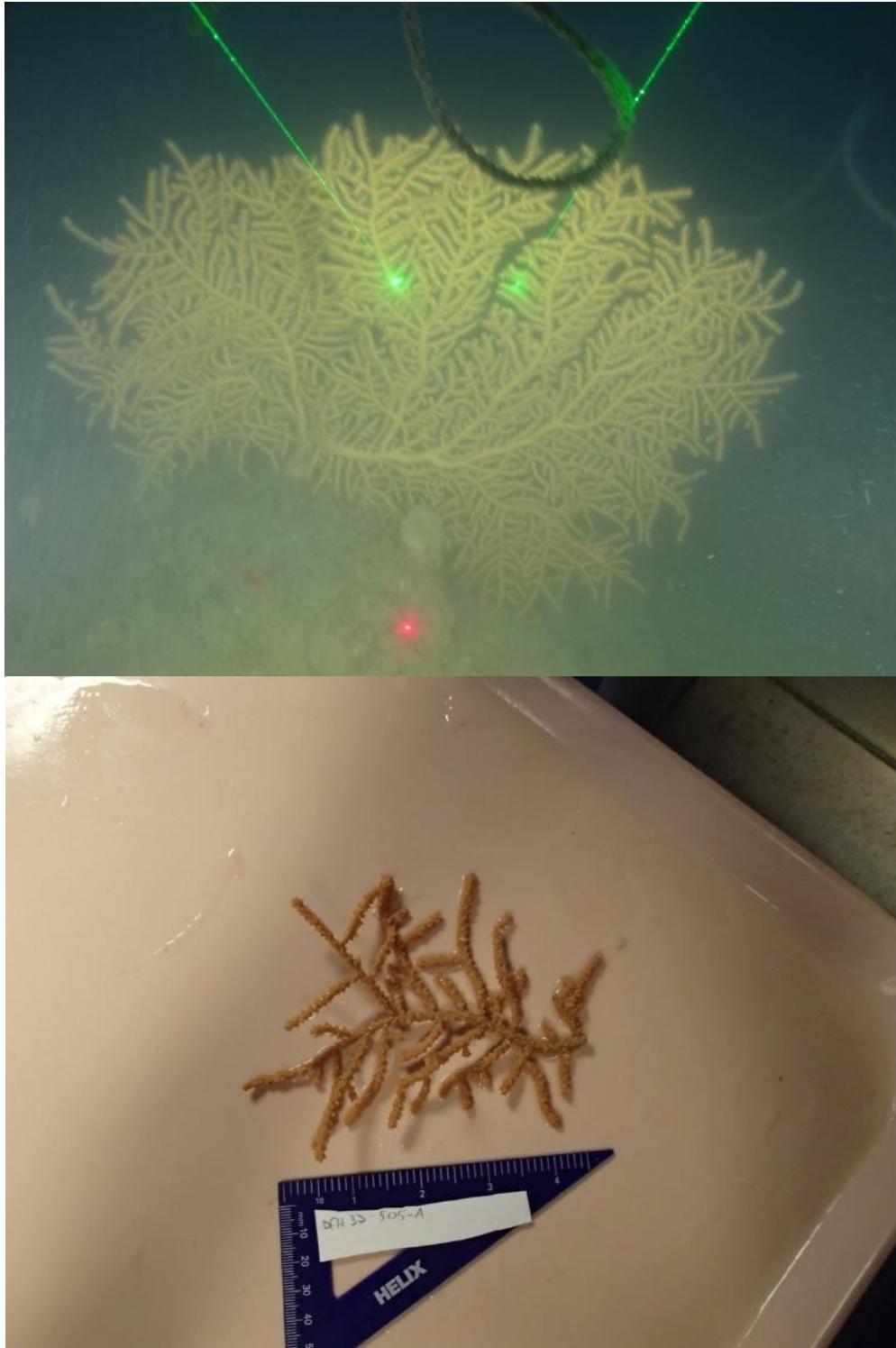
Map showing dive tracks of five ROV dives conducted at the Bright Bank Complex.



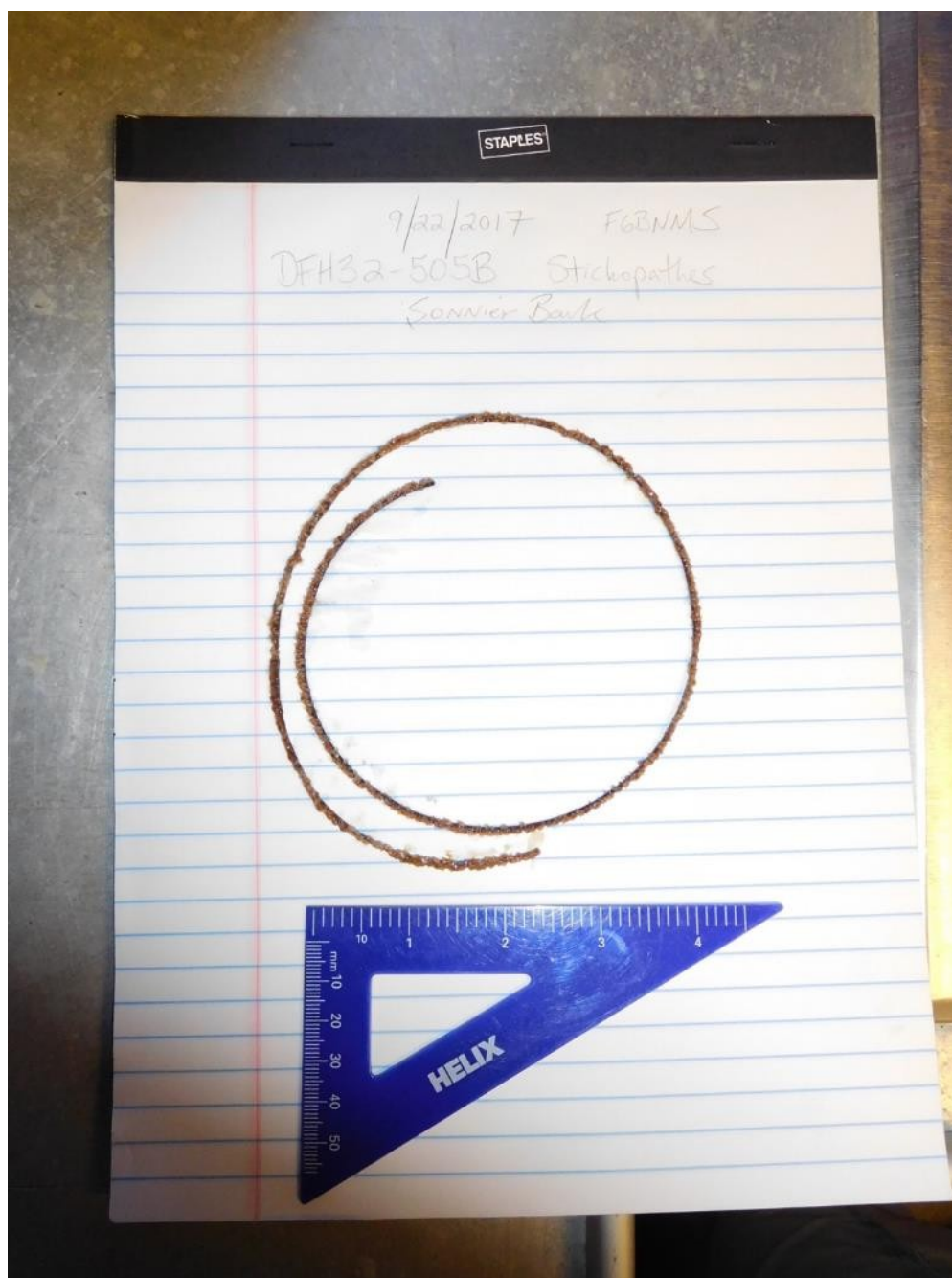
Highlight image showing crinoids clinging to an assemblage of *Elatopathes abietina* accompanied by *Nicella* spp, branching white stony coral (sample DFH32-513A), and glass sponges (sample DFH33-551A) taken during Dive 551 at 28 Fathom Bank. Lasers are 10 cm apart.

## **Appendix 2: Specimen photographs**

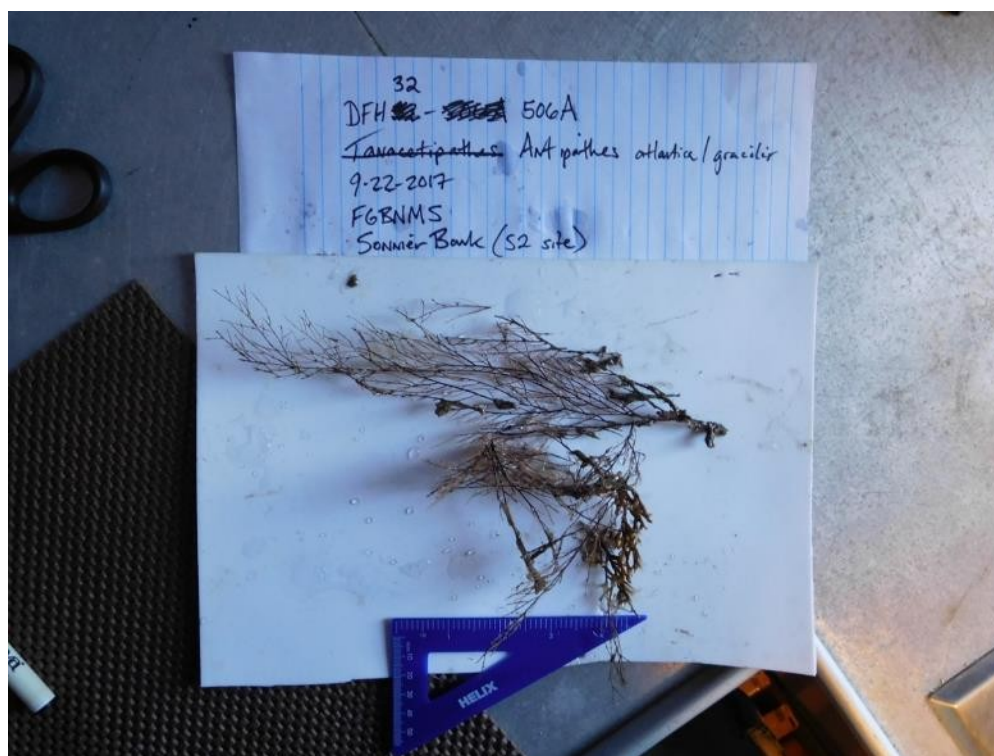
All available *in situ* and sample photographs of the specimens collected during the expeditions.



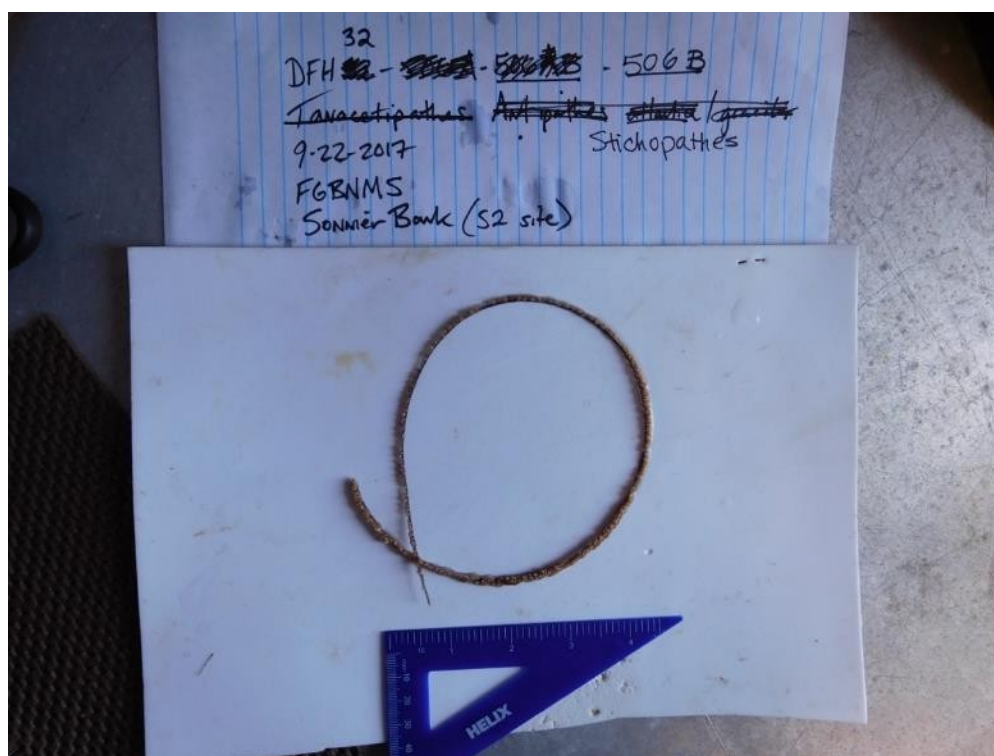
*Hypnorgia* sp. (DFH32-505A) collected at Sonnier Bank from 58 m depth. Lasers are 10 cm apart.



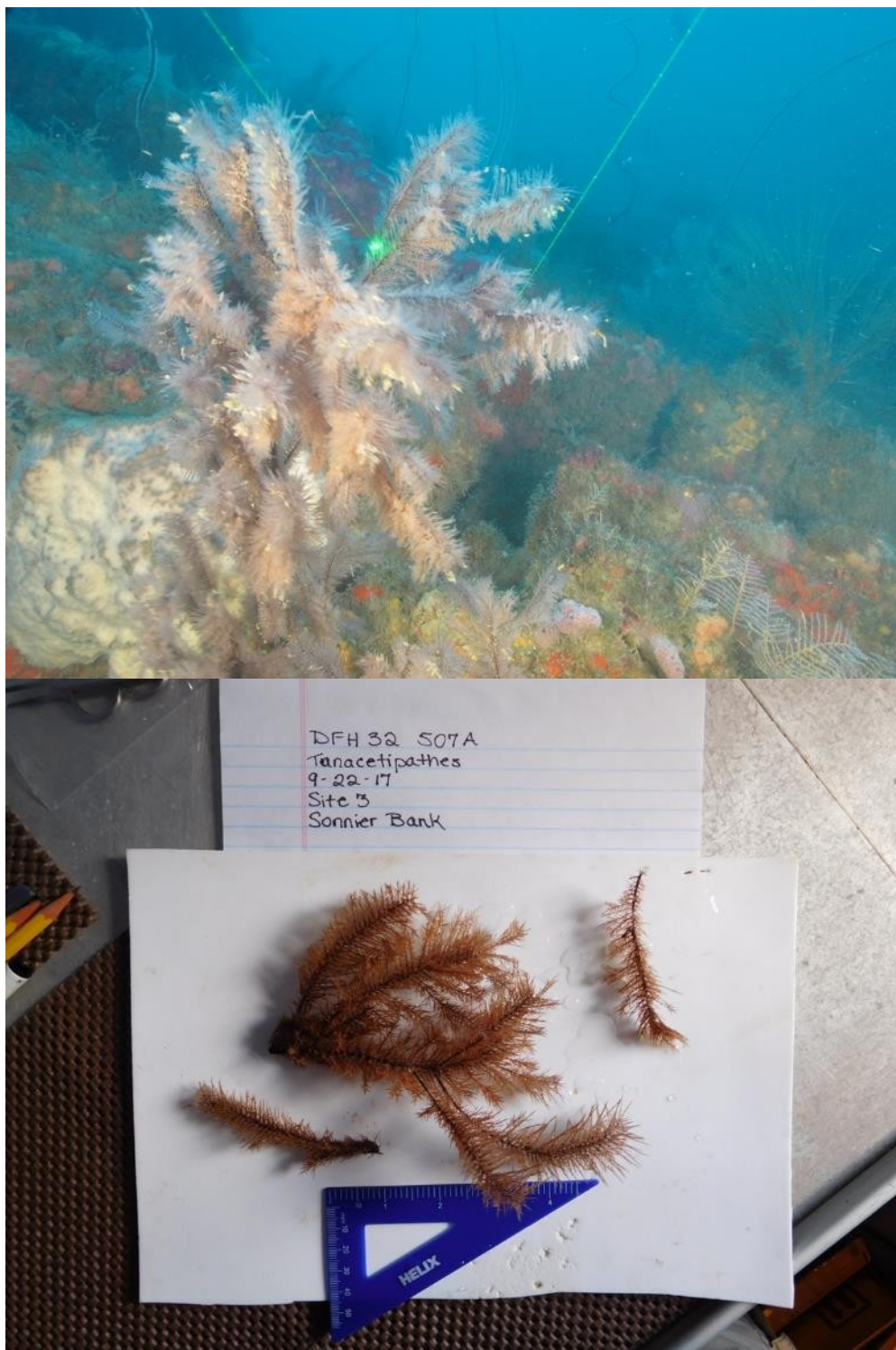
*Stichopathes* sp. (DFH32-505B) collected at Sonnier Bank from 57-59 m depth.



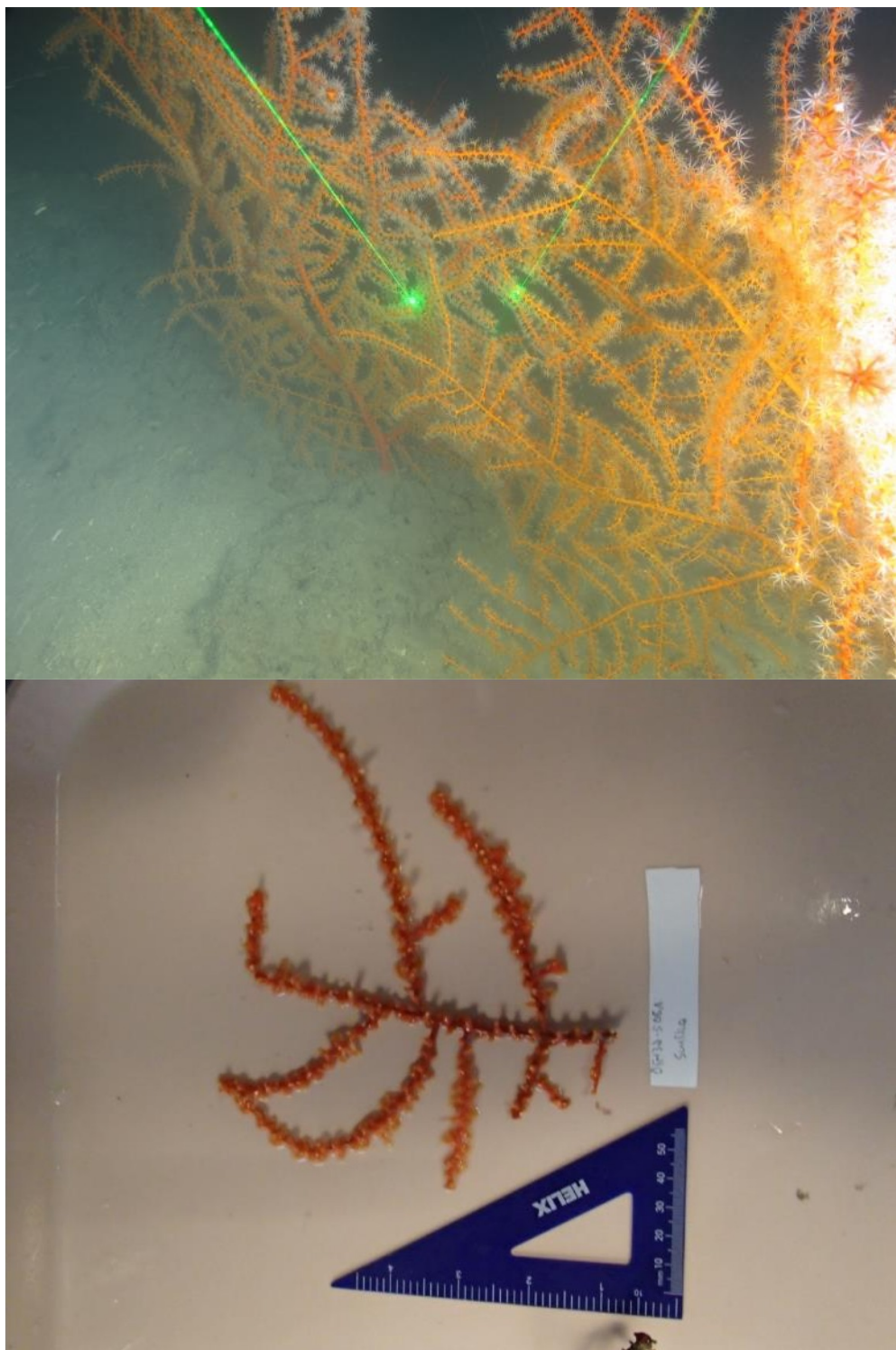
*Antipathes atlantica* (DFH32-506A) specimen collected from Sonnier Bank at 52 m depth.



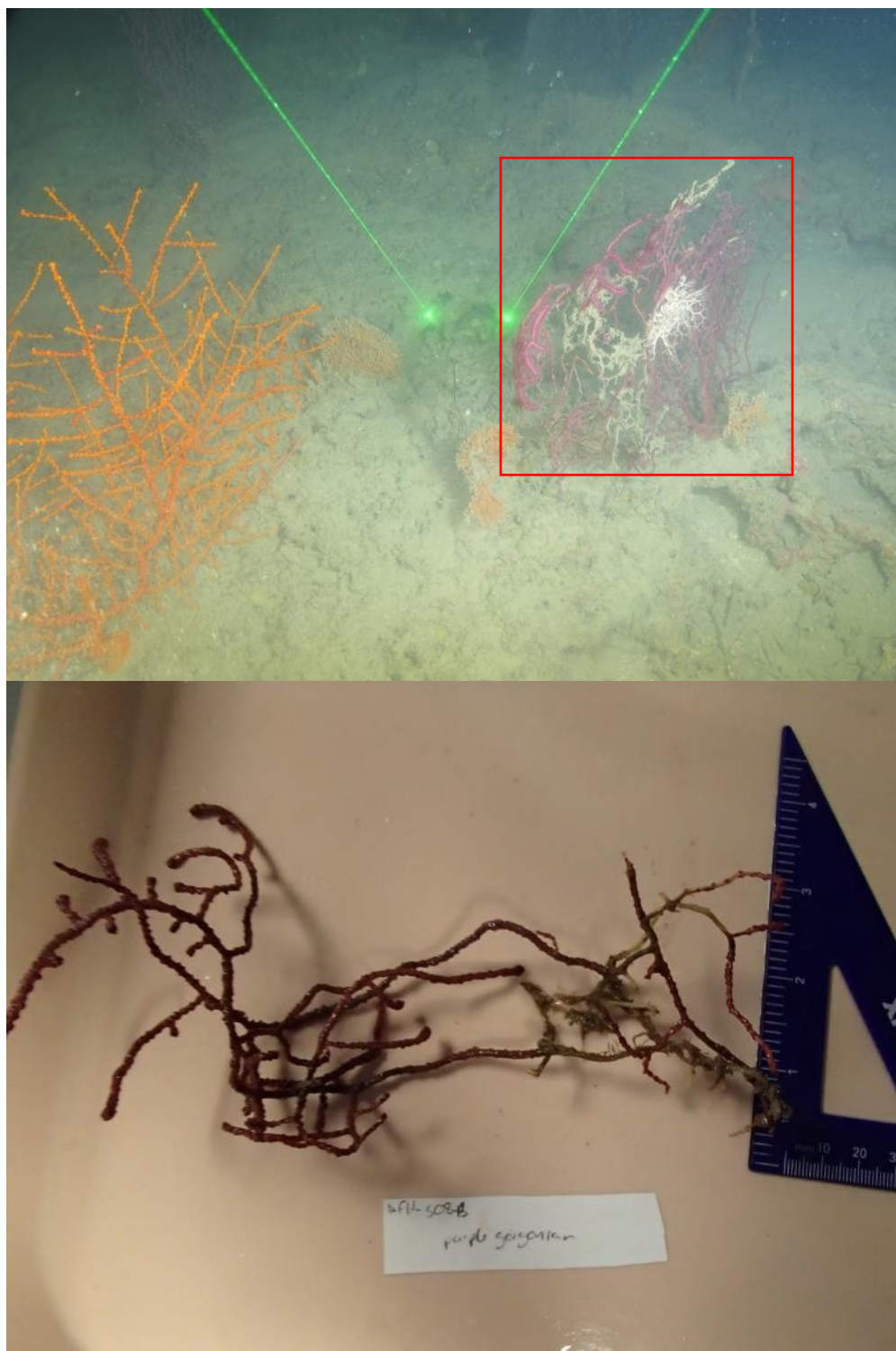
*Stichopathes* sp. (DFH32-506B) collected at Sonnier Bank between 45-54 m depth.



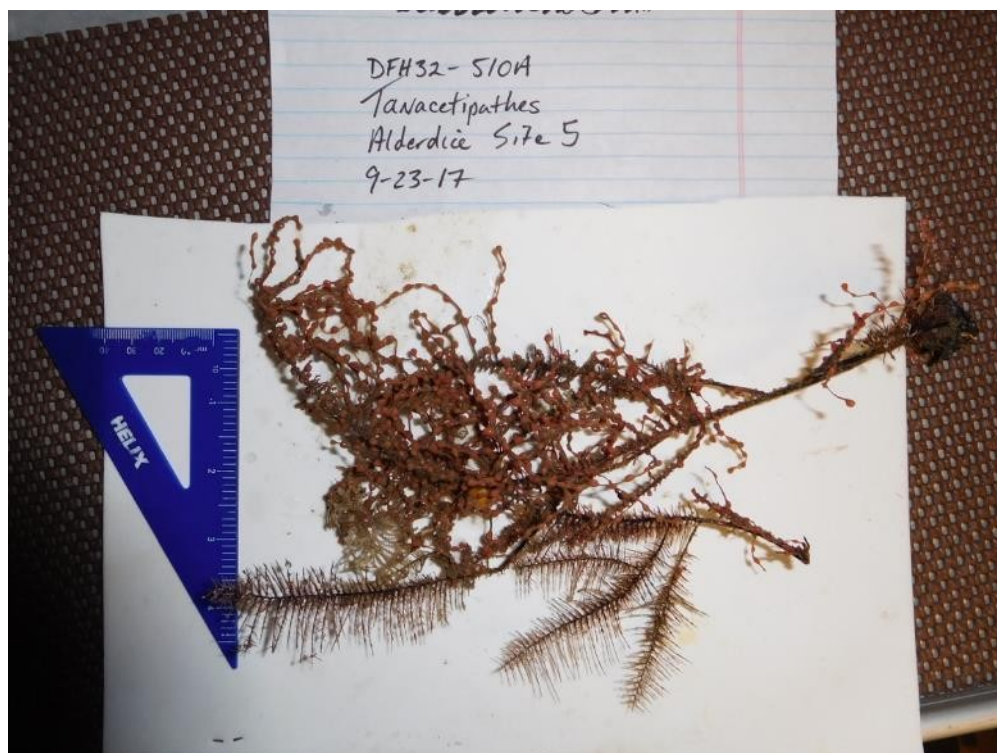
*Tanacetipathes* sp. (DFH32-507A) specimen collected from Sonnier Bank at 50 m depth. Lasers are 10 cm apart.



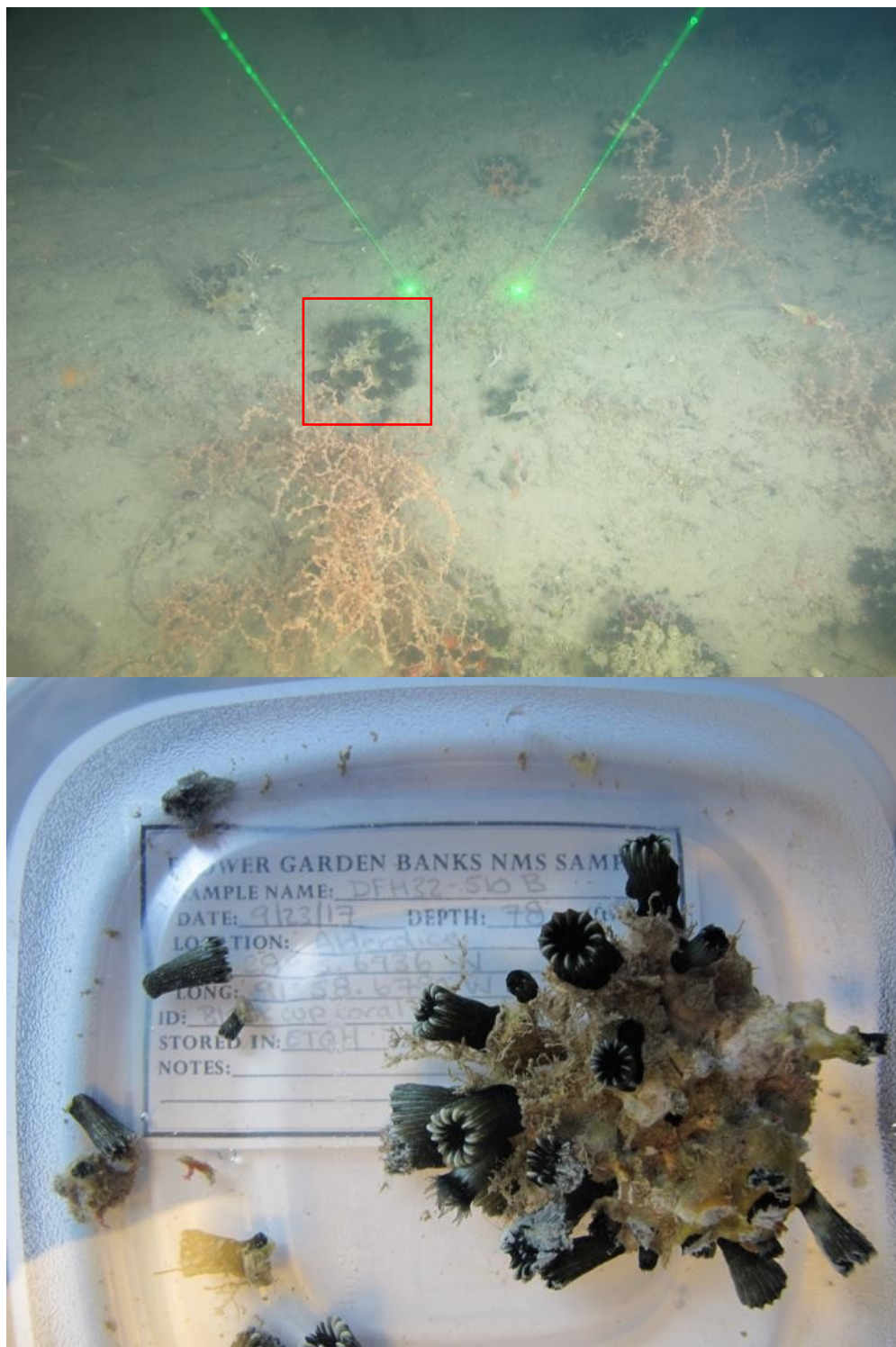
*Swiftia* sp. (DFH32-508A) specimen collected from Alderdice Bank at 82 m depth. Lasers are 10 cm apart.



*Muricea pendula* (DFH32-508B) specimen collected from Alderdice Bank at 84 m depth. Lasers are 10 cm apart.



*Tanacetipathes* sp. (DFH32-510A) specimen collect from Alderice Bank at 82 m.



*Rhizopsammia* sp. (DFH32-510A) specimen collected from Alderdice Bank at 78 m depth. Lasers are 10 cm apart.



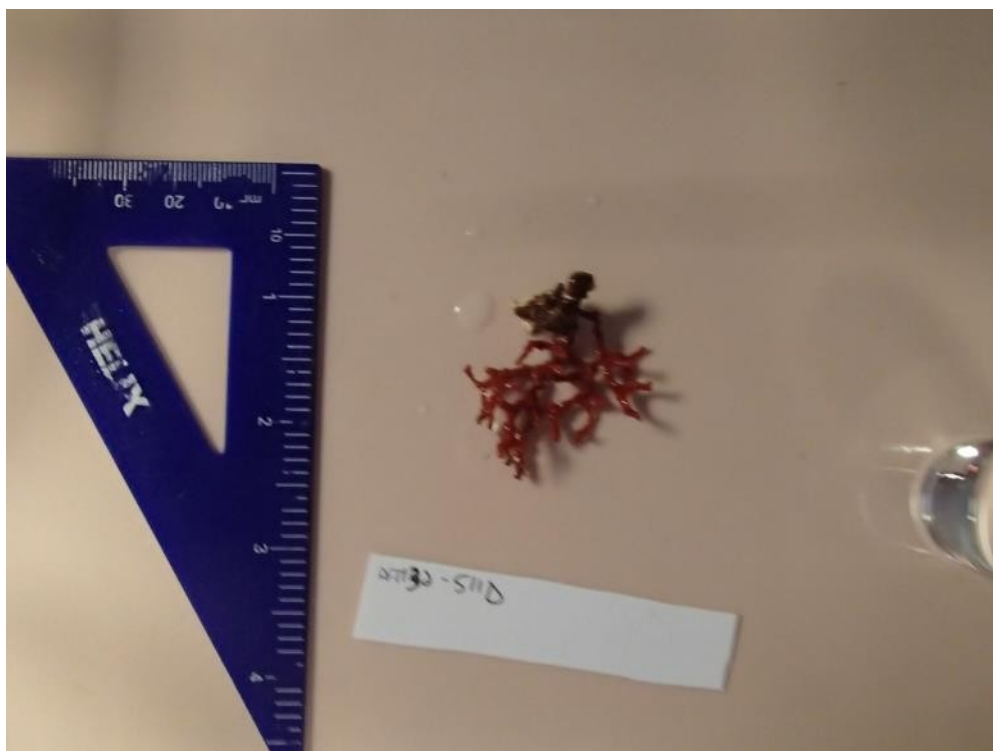
*Tanacetipathes* sp. (DFH32-511A) specimen collected from Alderdice Bank at 63 m. Lasers are 10 cm apart.



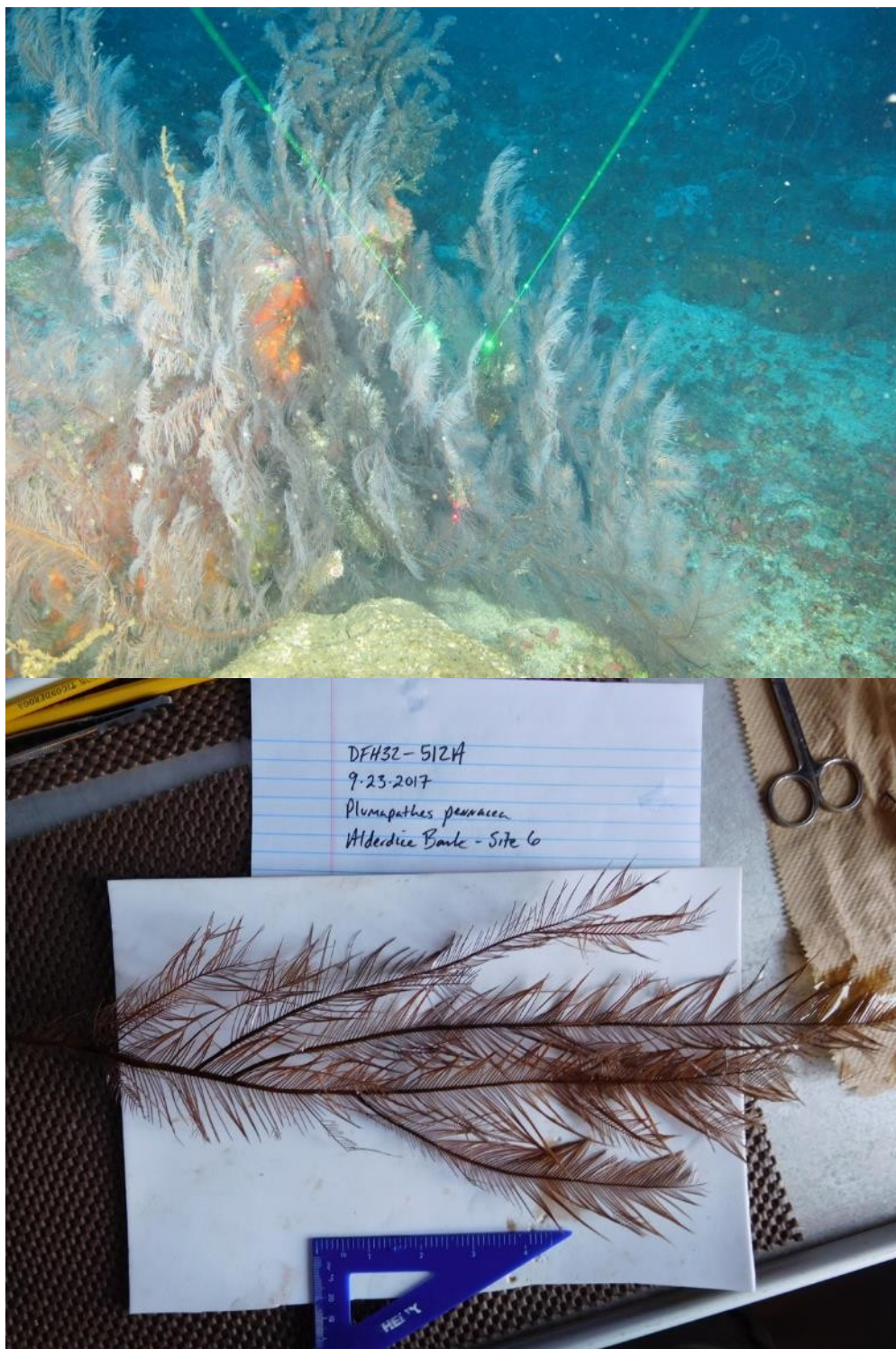
Bryozoan (DFH32-511B) specimen collected from Alderdice Bank at 66 m depth. Lasers are 10 cm apart.



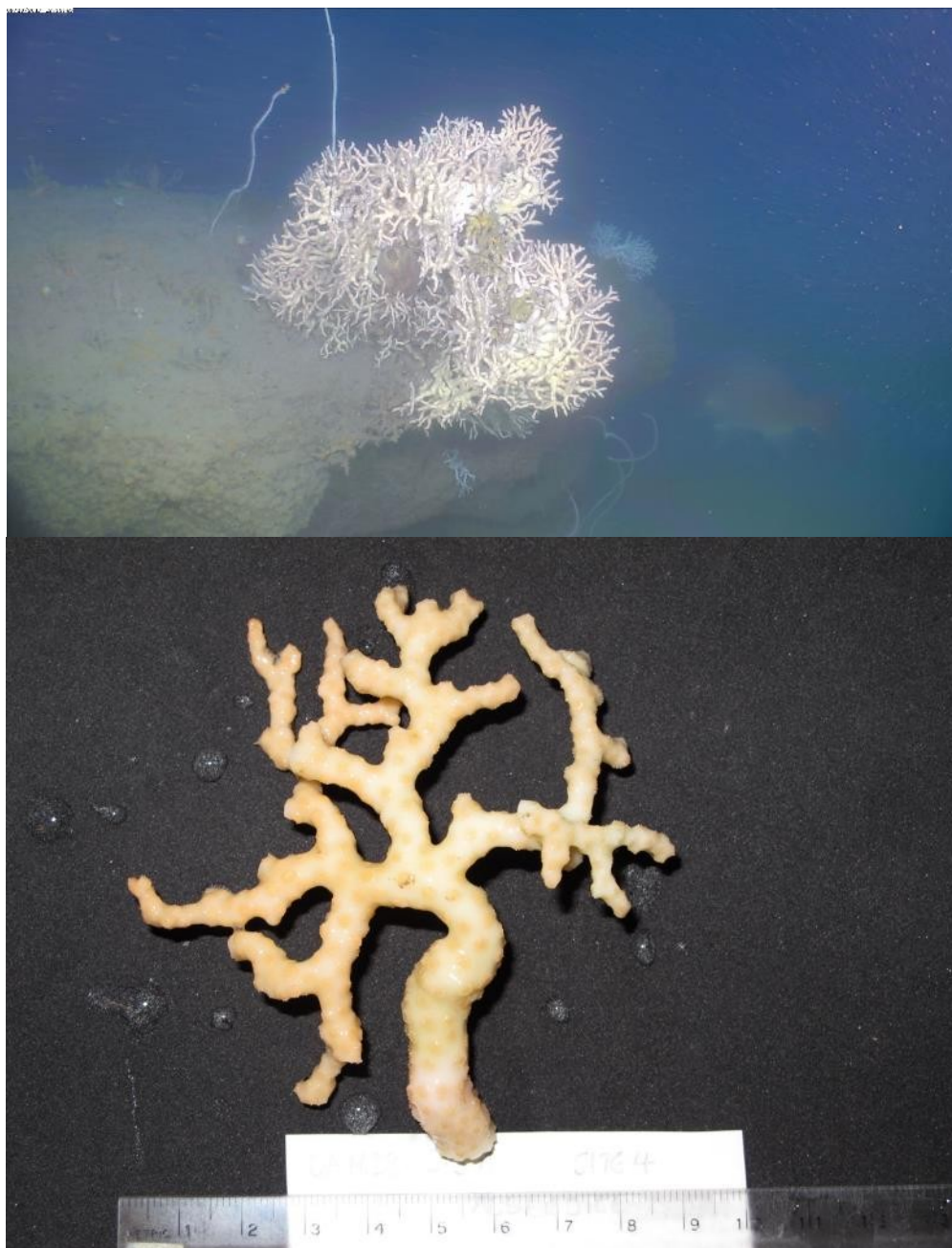
*Thesea rubra* (DFH32-511C) specimen collected from Alderdice Bank at 66 m depth.



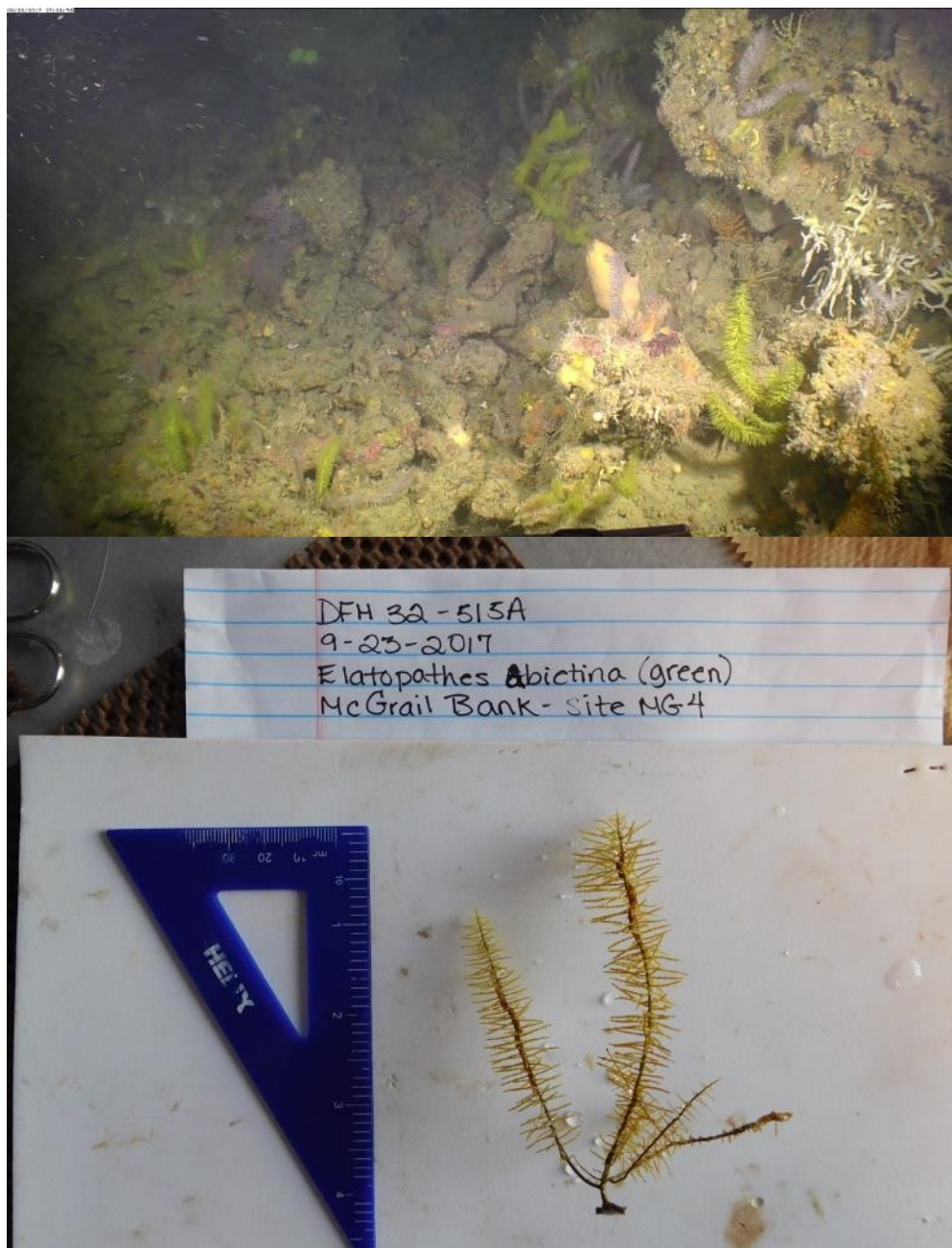
Unidentified red gorgonian coral (DFH32-511D) specimen collected from Alderdice Bank at 66 m.



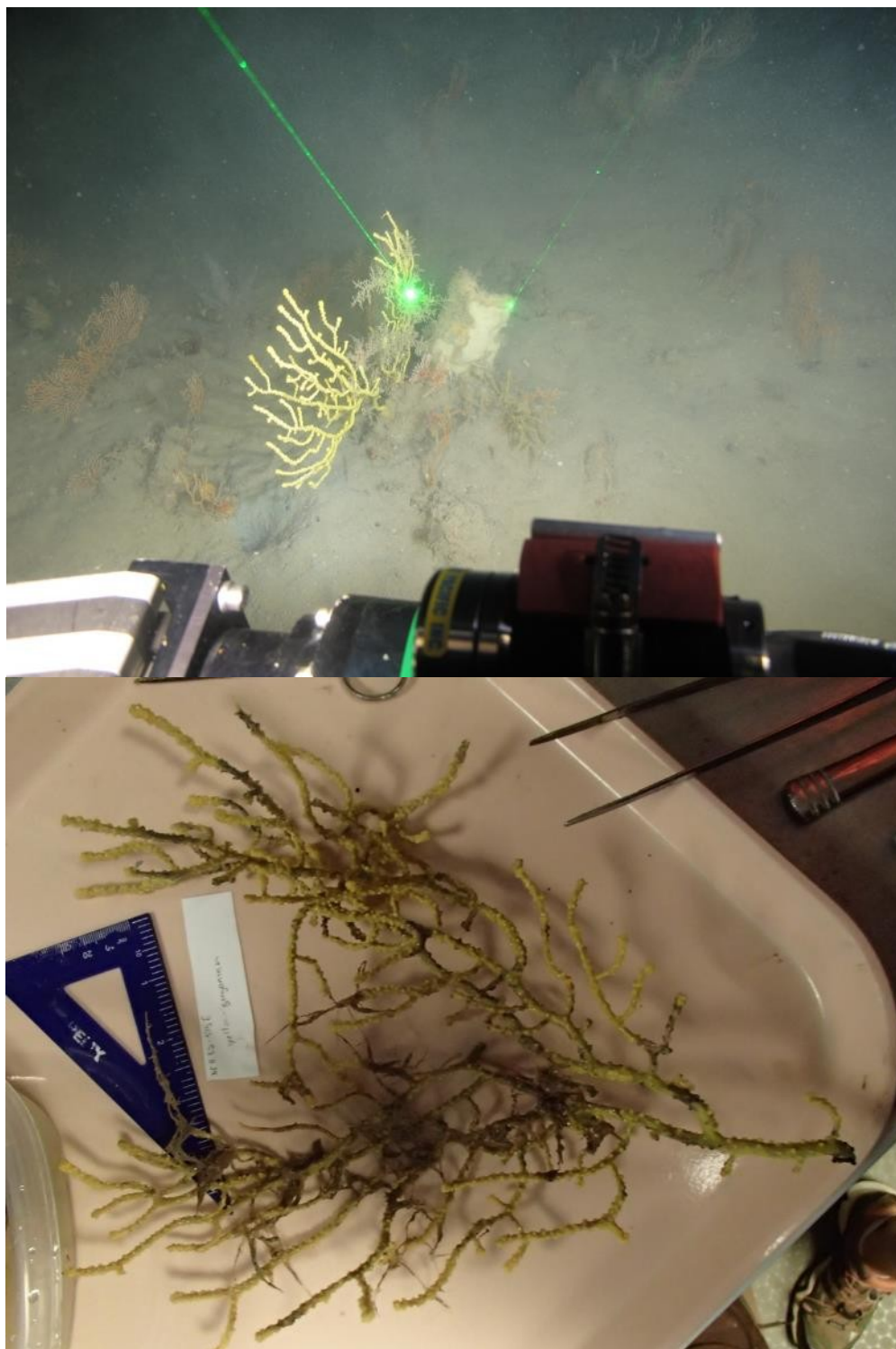
*Plumapathes pennaneae* (DFH32-512A) specimen collected from Alderdice Bank at 69 m. Lasers are 10 cm apart.



*Madracis* sp. (S02) (DFH32-513A) specimen collected from Alderdice Bank at 94 m.



*Elatopathes abietina* (DFH32-515C) specimen collected from McGrail Bank at 125 m.



*Paramuricea* sp. (DFH32-515B) specimen collected from McGrail Bank at 125 m depth.



*Elatopathes abietina* (DFH32-515C) specimen collected from McGrail Bank at 125 m depth.



Threadnose bass (DFH32-515D) specimen collected from McGrail Bank at 125 m depth.



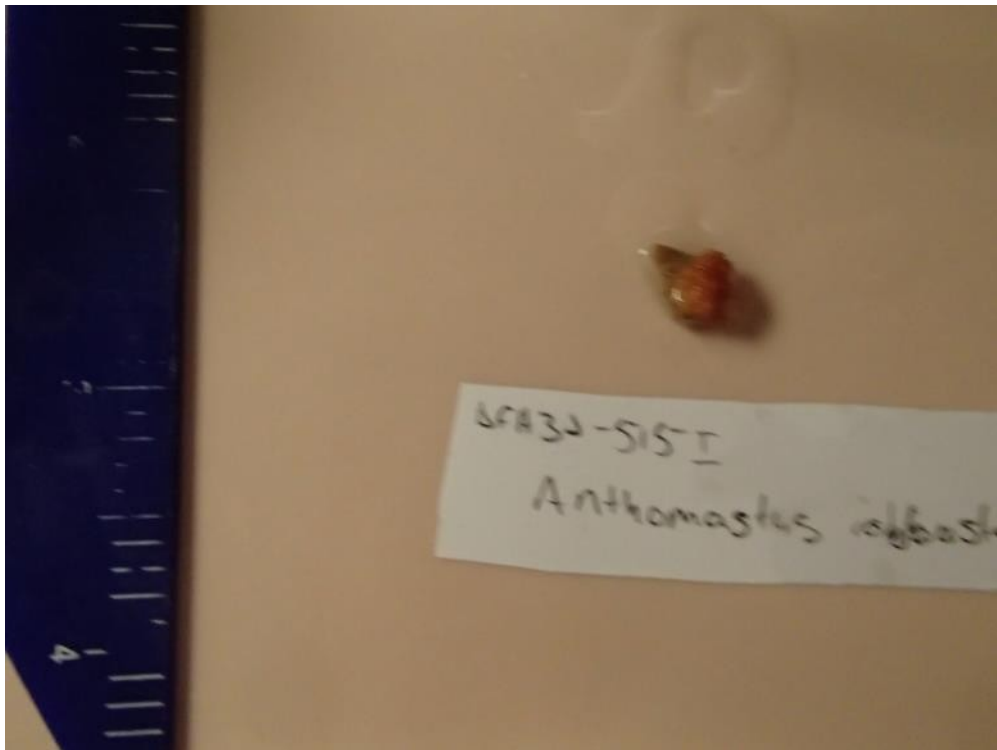
*Nicella* sp. (DFH32-515E) specimen collected from McGrail Bank at 125 m depth.



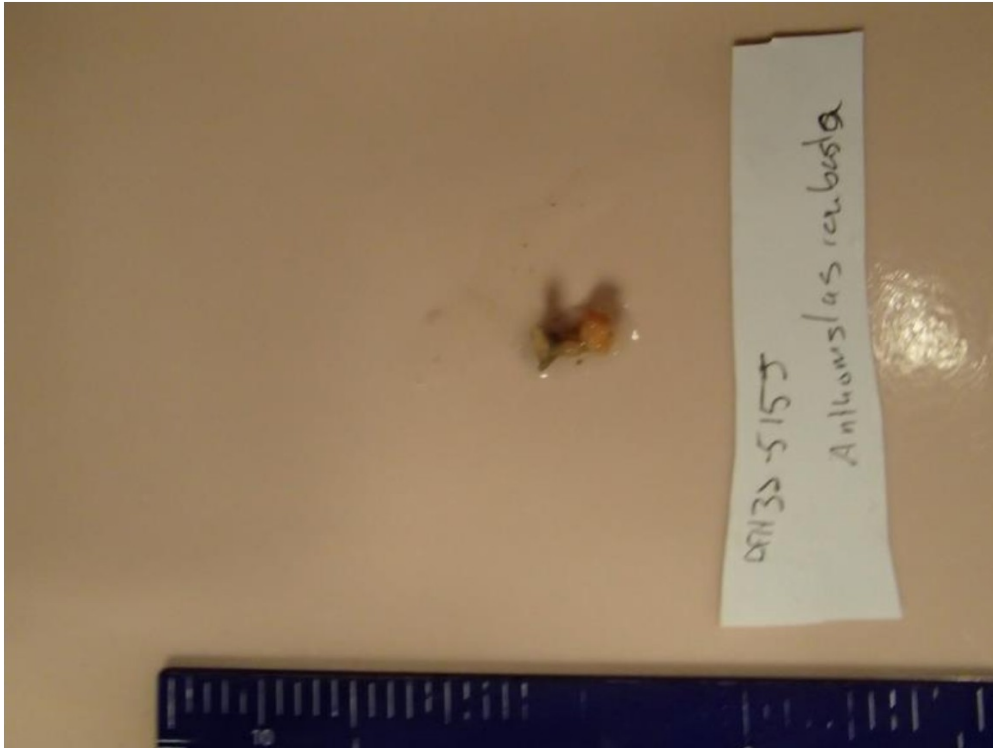
*Chironepthya caribaea* (DFH32-515G) specimen collected from McGrail Bank at 125 m depth.



*Chironepthya caribaea* (DFH32-515H) specimen collected from McGrail Bank at 125 m depth.



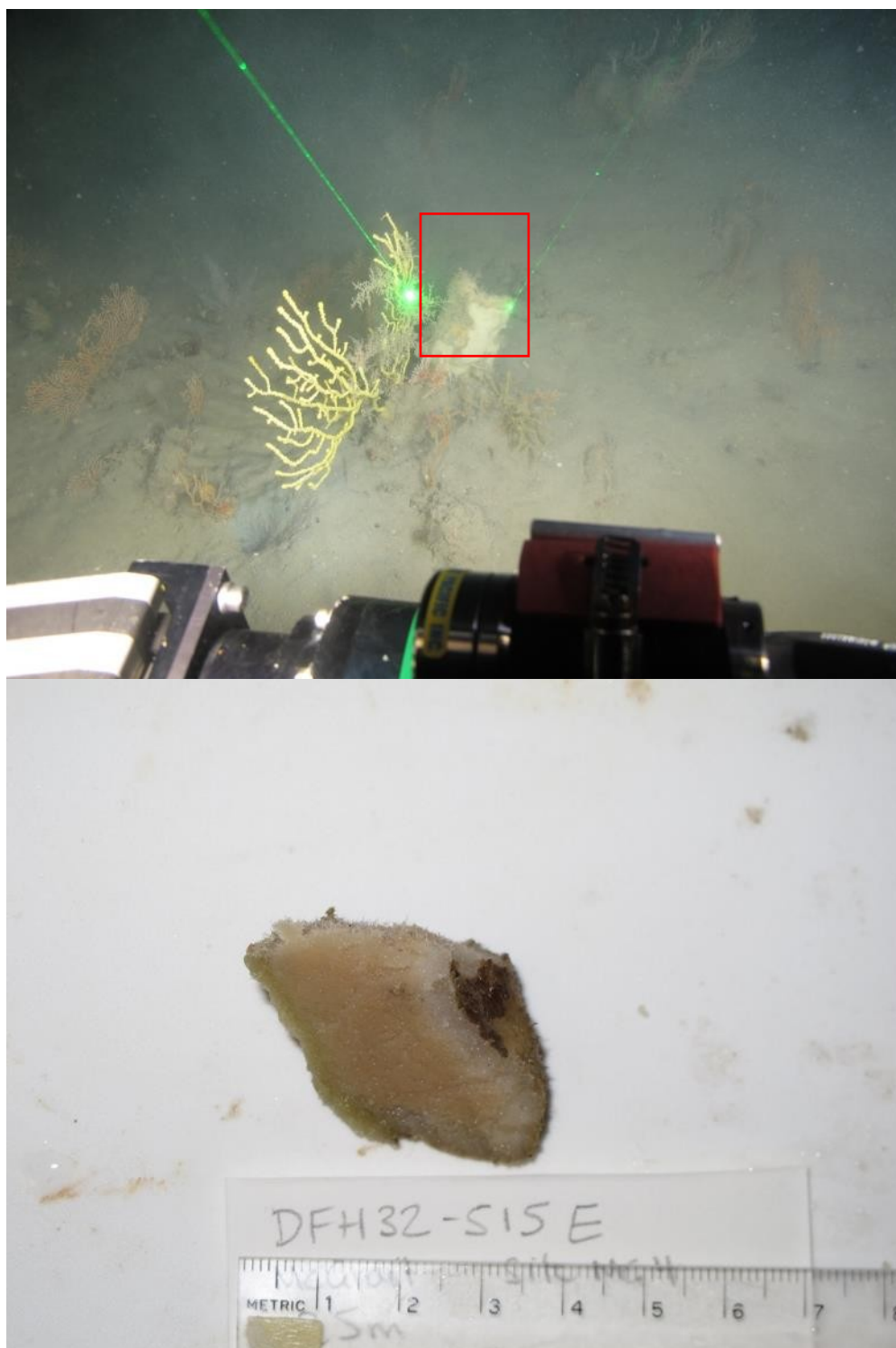
*Anthomastus robusta* (DFH32-515I) specimen collected from McGrail Bank at 125 m depth.



*Anthomastus robusta* (DFH32-515J) specimen collected from McGrail Bank at 125 m depth.



*Anthomastus robusta* (DFH32-515K) specimen collected from McGrail Bank at 125 m depth.



White sponge (DFH32-515N) specimen collected from McGrail Bank at 125 m depth. Lasers are 10 cm apart.



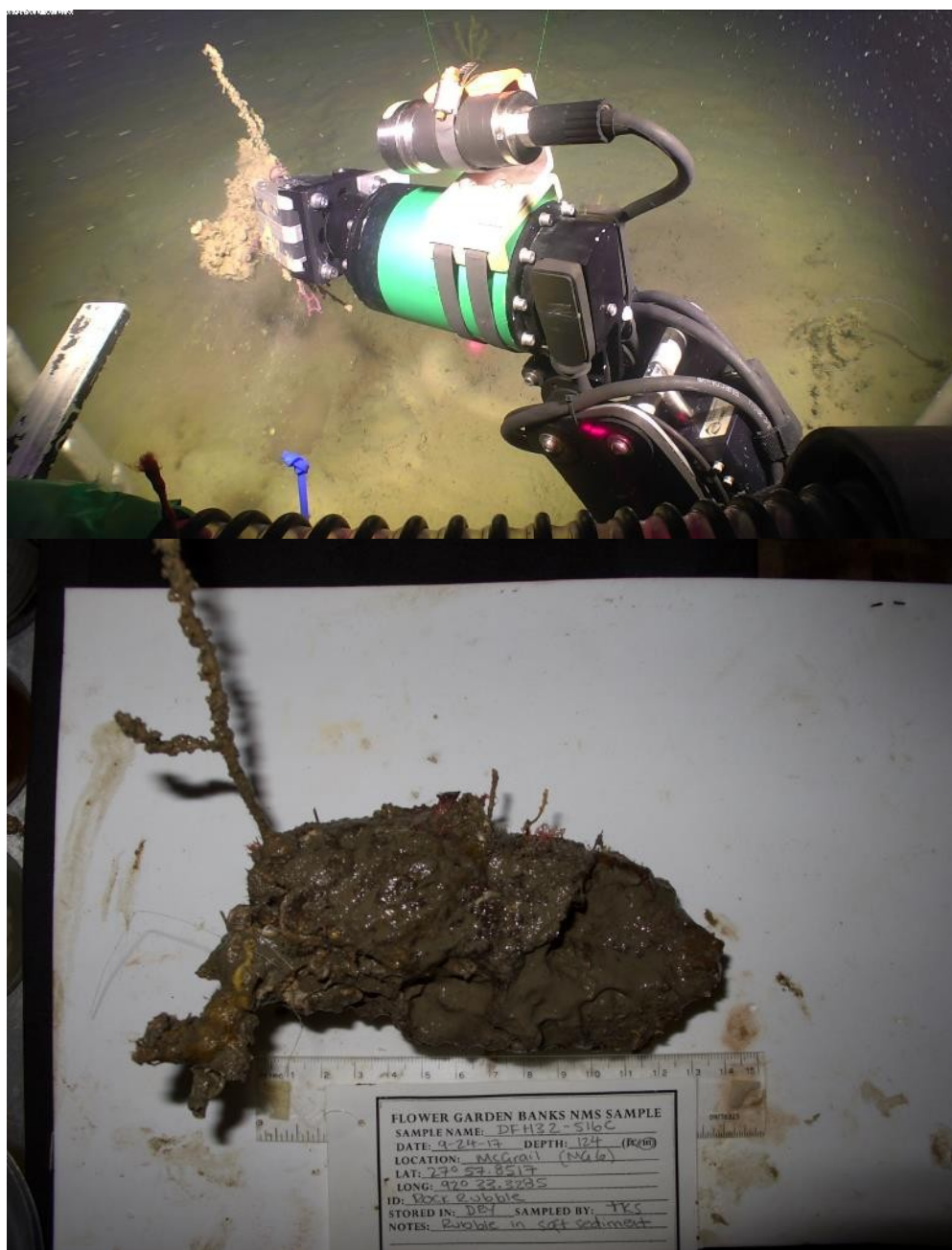
Substrate (DFH-5150) sample collected from McGrail Bank at 125 m depth. Lasers are 10 cm apart.



*Muricea pendula* (DFH32-516A) specimen collected from McGrail Bank at 124 m depth. Lasers are 10 cm apart.



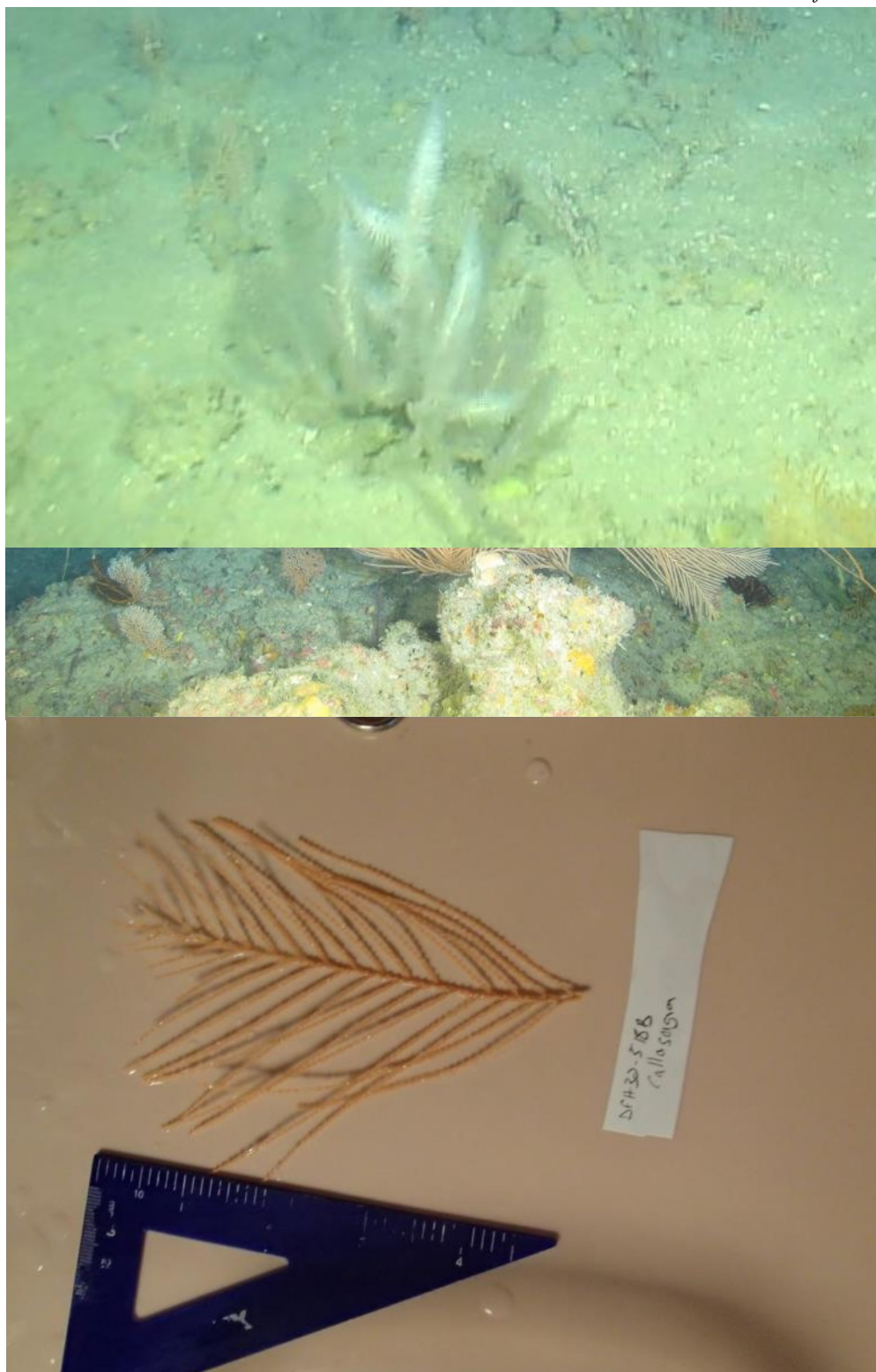
*Oxysmilia rotundifolia* (DFH32-516B) specimen collected from McGrail Bank at 124 m depth.



Substrate (DFH32-516C) sample collected at McGrail Bank at 124 m depth.



*Tanacetipathes* sp. (DFH32-518A) specimen collected from McGrail Bank at 93 m depth. Lasers are 10 cm apart.



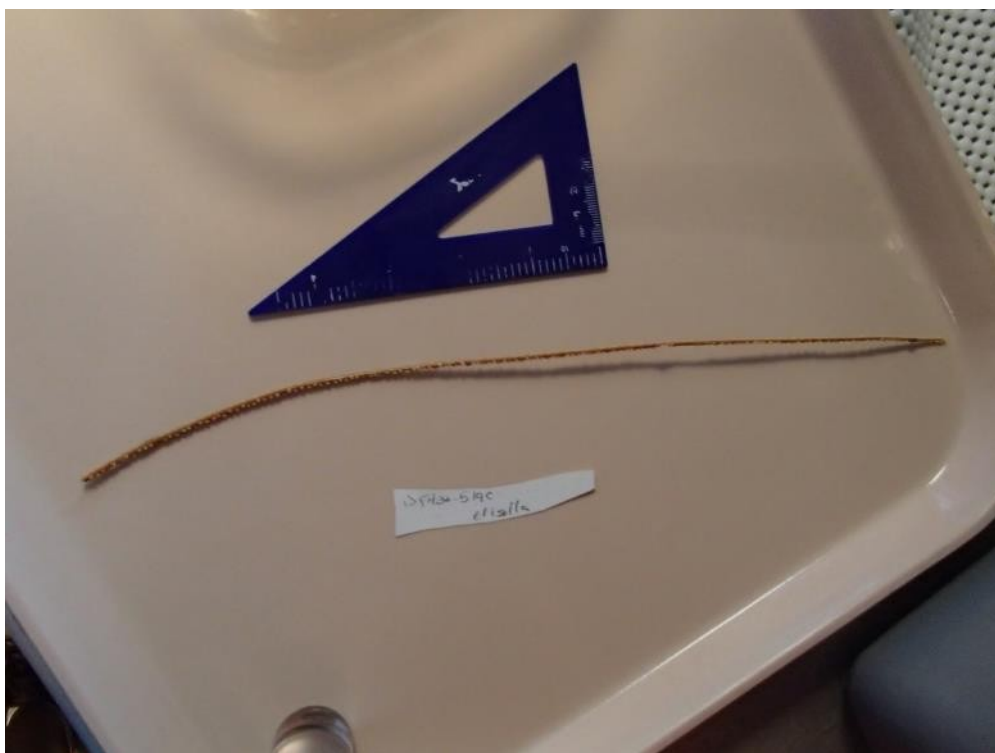
*Callogorgia gracilis* (DFH32-518B) specimen collected from McGrail Bank at 98 m depth.



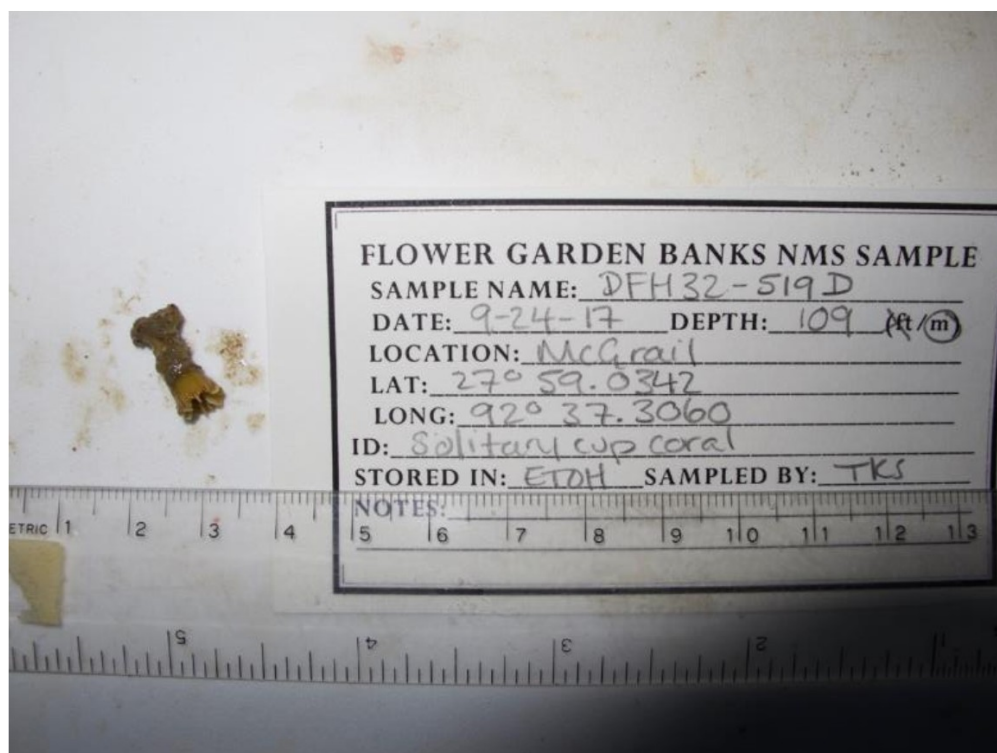
*Elatopathes abietina* (DFH32-519A) specimen collected from McGrail Bank at 109 m depth.



*Caliacis* sp. (DFH32-519B) specimen collected from McGrail Bank at 109 m depth. Lasers are 10 cm apart.



*Ellisella* sp. (DFH32-519C) specimen collected from McGrail Bank at 109 m depth. Lasers are 10 cm apart.



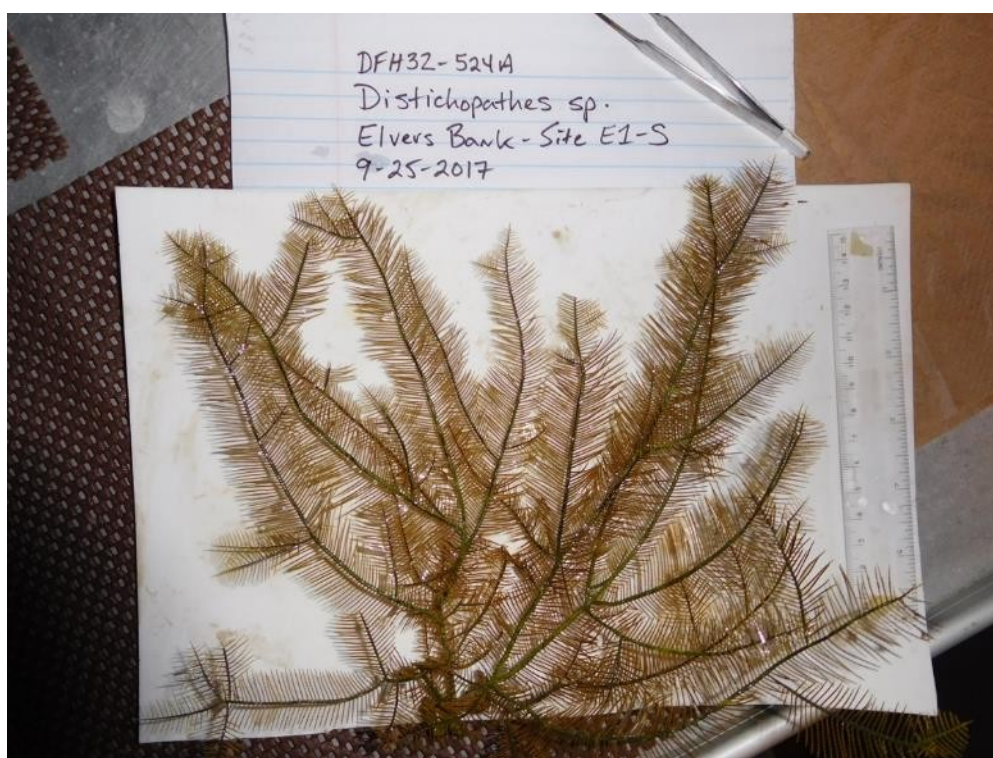
Solitary cup coral (DFH32-519D) specimen collected from McGrail Bank at 109 m depth.



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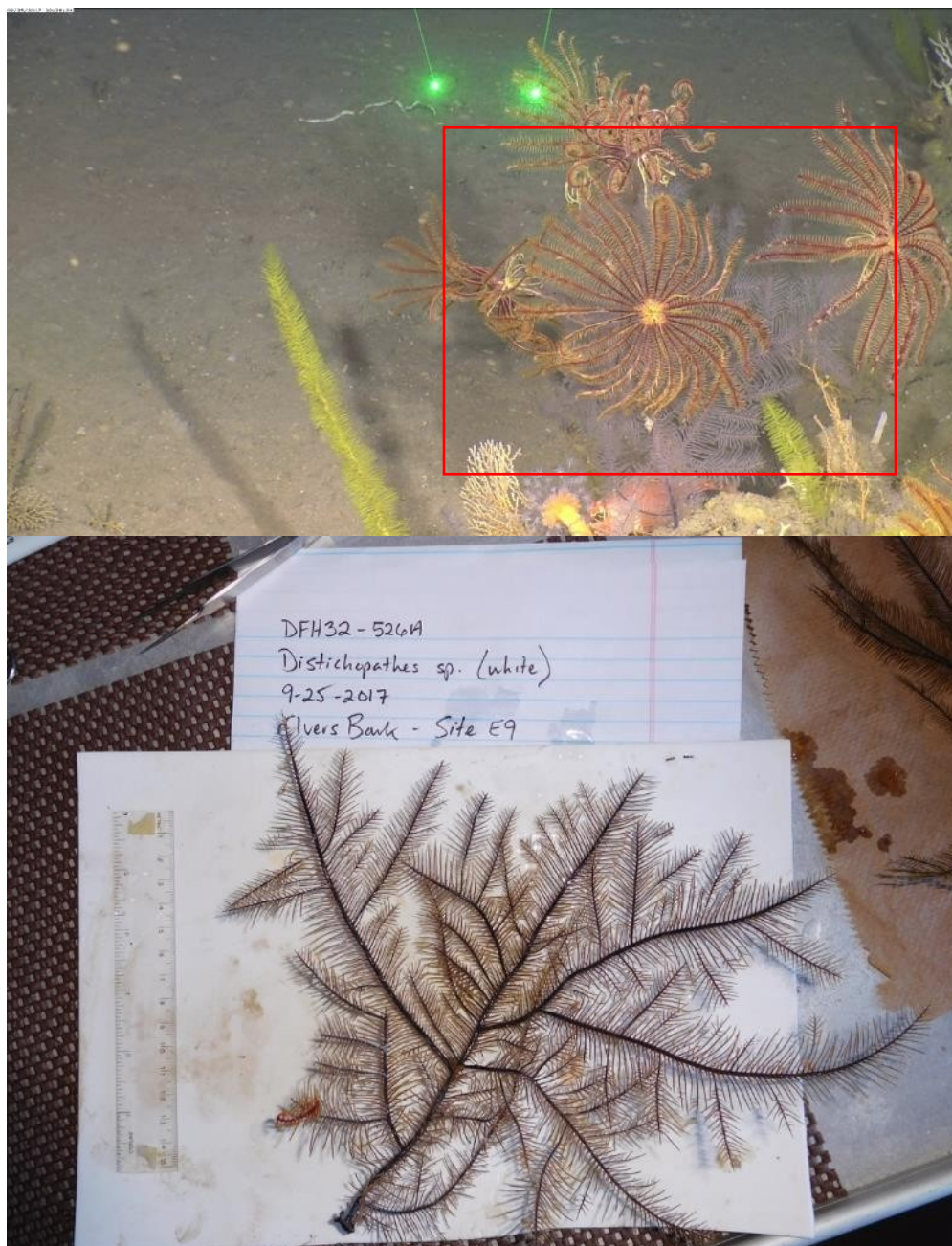
*Ellisella* sp. (DFH32-523A) specimen collected from McGrail Bank at 95 m.



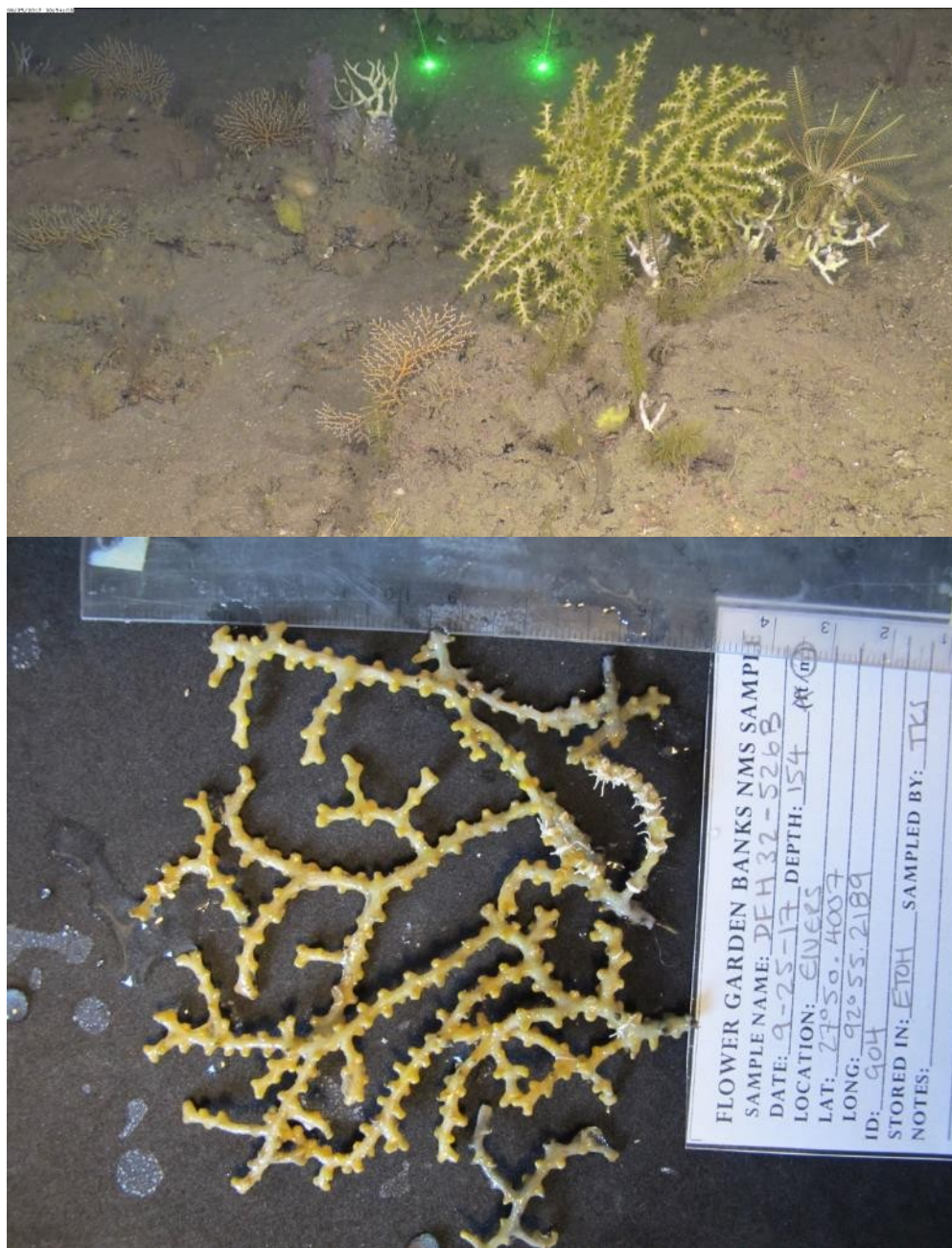
*Distichopathes* sp. (DFH32-524A) specimen collected from Elvers Bank at 172 m depth. Lasers are 10 cm apart.



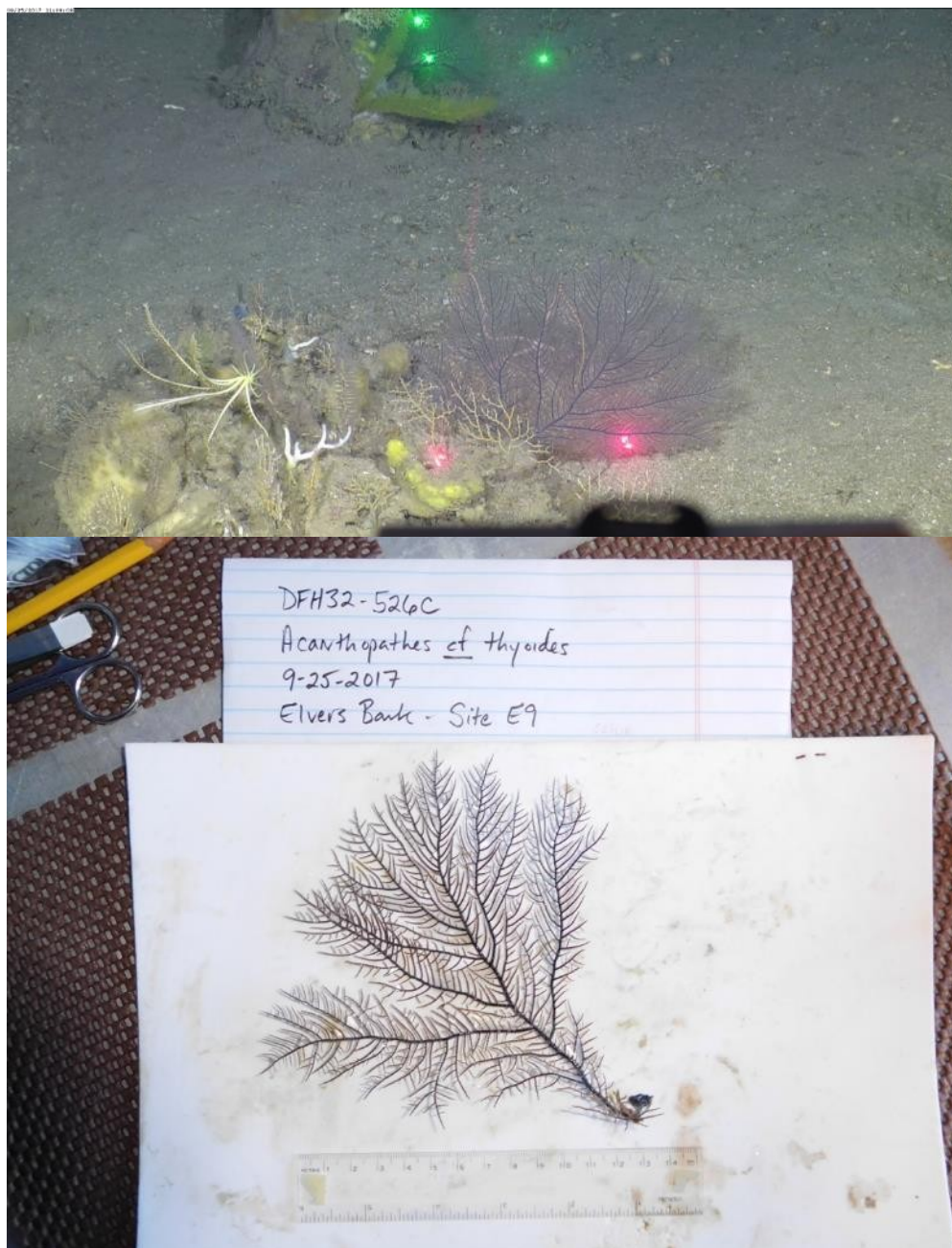
*Distichopathes* sp. (DFH32-524B) specimen collected from Elvers Bank at 172 m depth. Lasers are 10 cm apart.



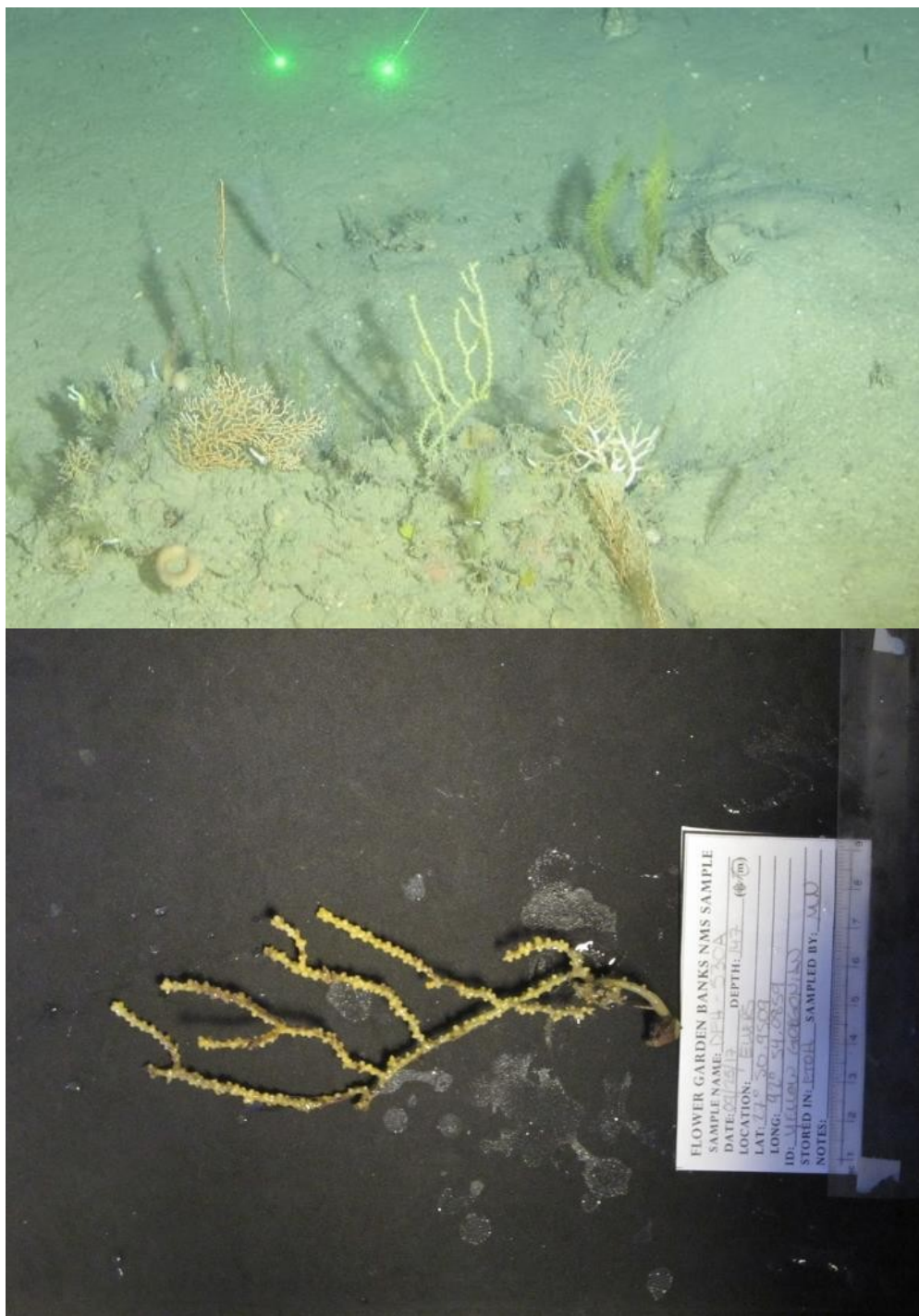
*Distichopathes* sp. (DFH32-526A) specimen collected from Elvers Bank at 148 m depth. Lasers are 10 cm apart.



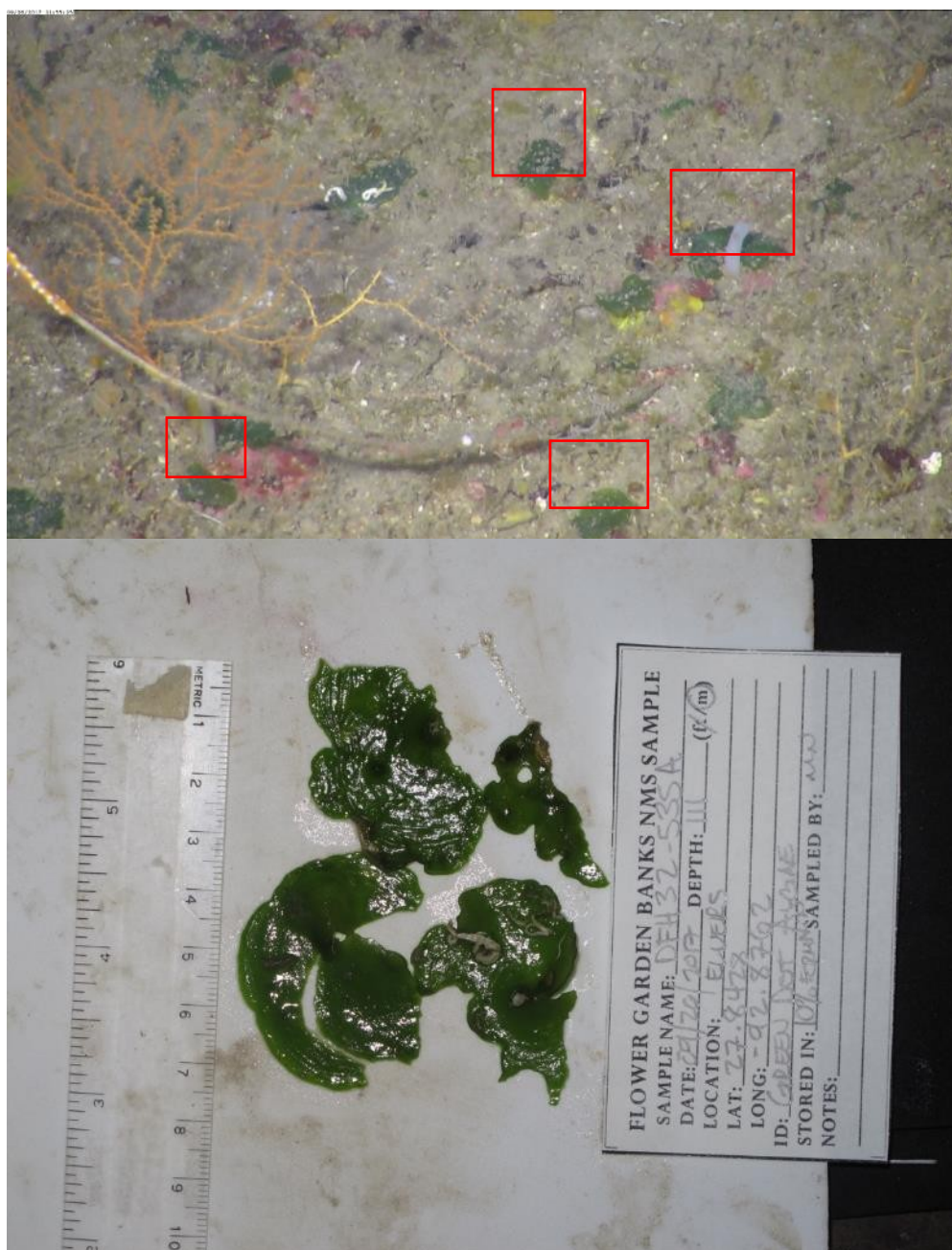
Yellow gorgonian (G04) (DFH32-526B) specimen collected from Elvers Bank at 154 m depth. Lasers are 10 cm apart.



*Acanthopathes thyoidea* (DFH32-526C) specimen collected from Elvers Bank at 153 m depth. Lasers are 10 cm apart.



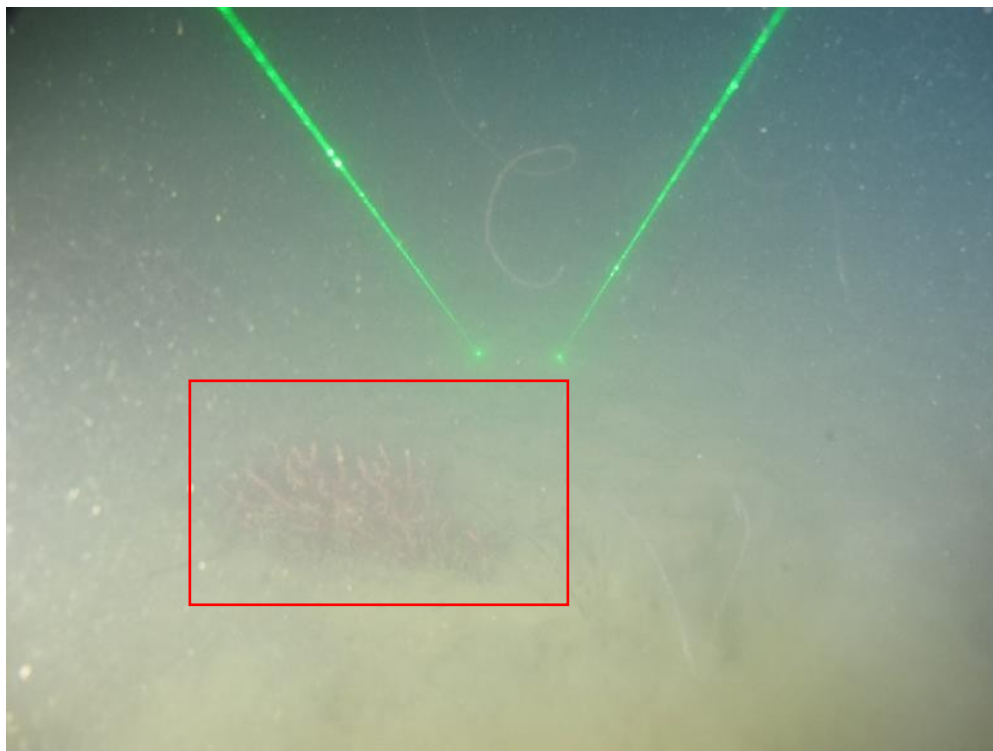
Yellow gorgonian (DFH32-530A) specimen collected from Elvers Bank at 147 m depth. Lasers are 10 cm apart.



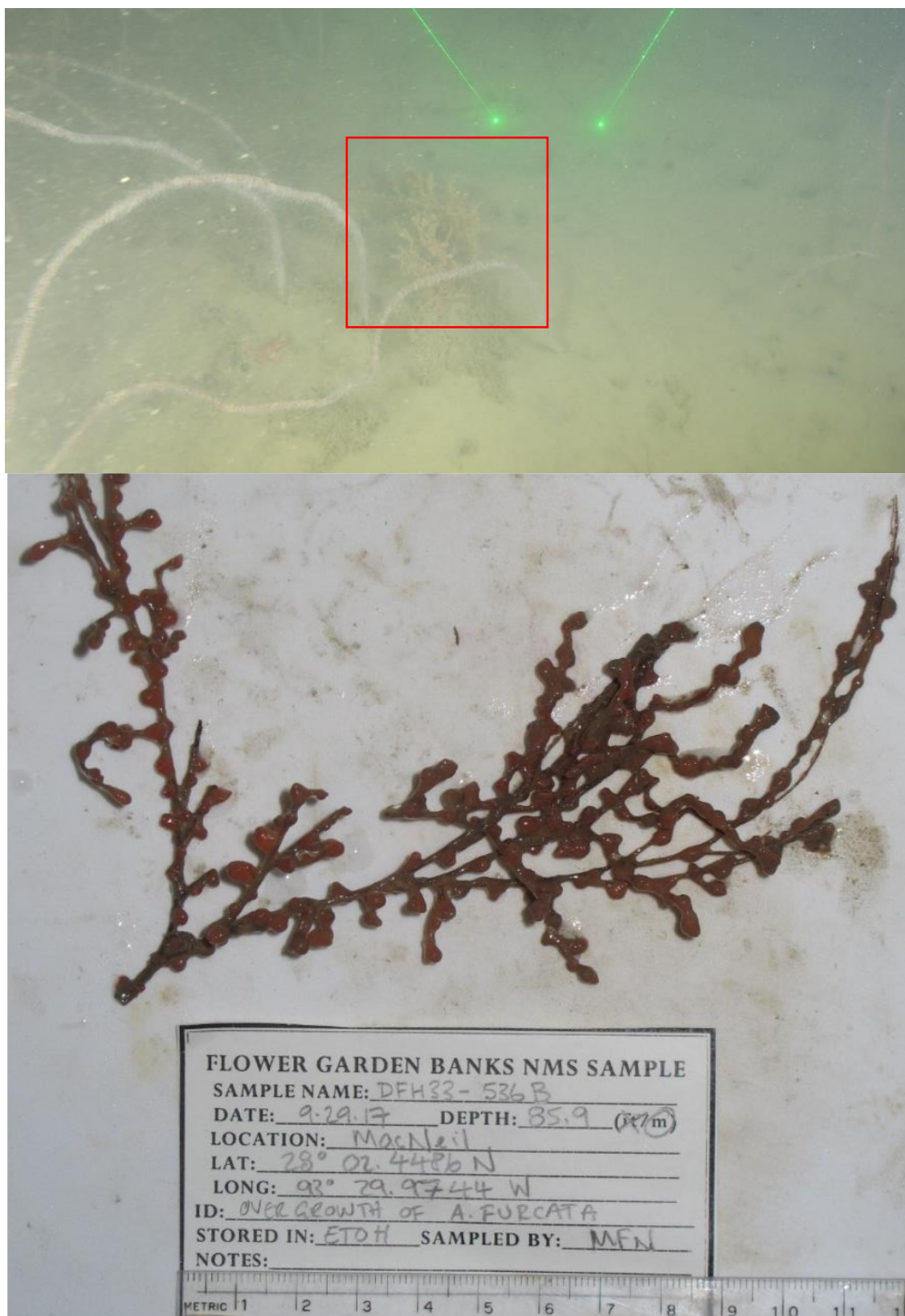
Green dot algae (DFH32-535A) specimen collected from Elvers Bank at 111 m depth.



*Callogorgia gracilis* (DFH32-525B) specimen collected from Elvers Bank at 111 m depth. Lasers are 10 cm apart.

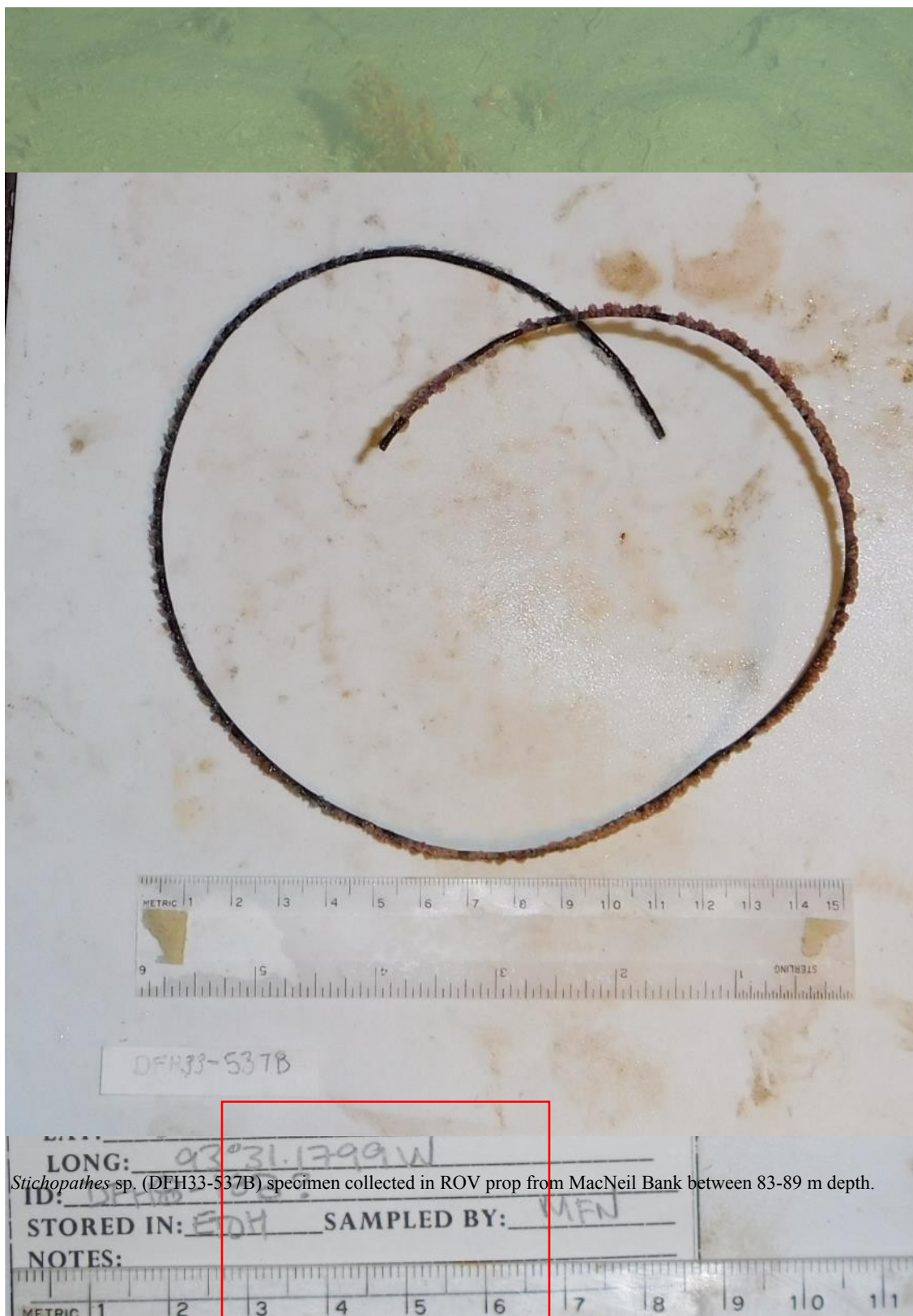


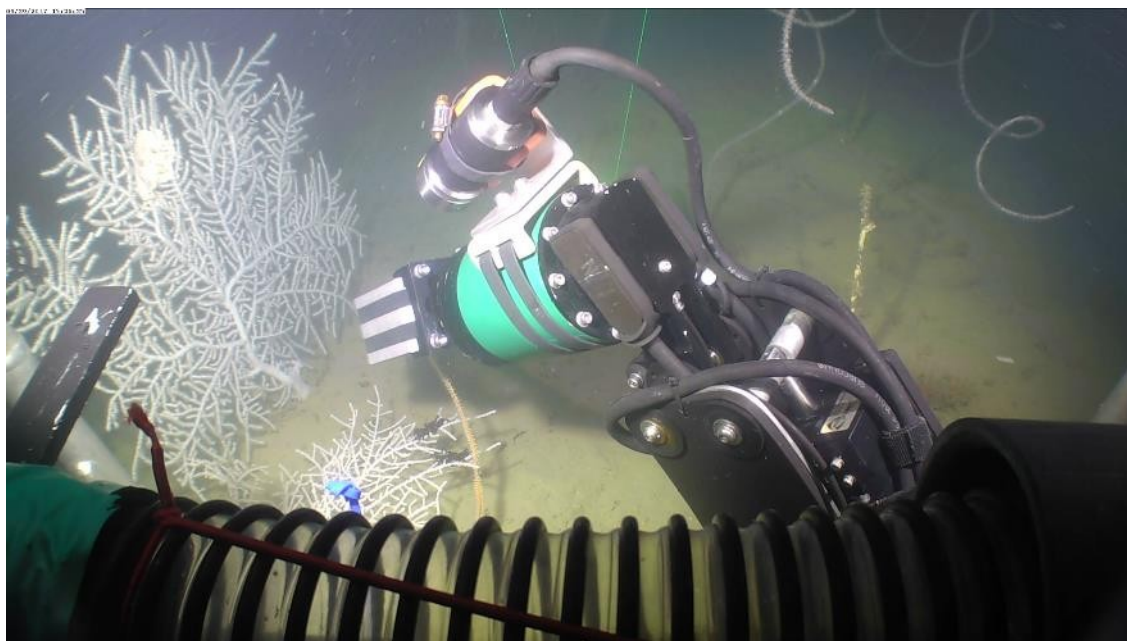
*Muricea pendula* (DFH33-536A) specimen collected from MacNeil Bank at 86 m depth. Lasers are 10 cm apart.



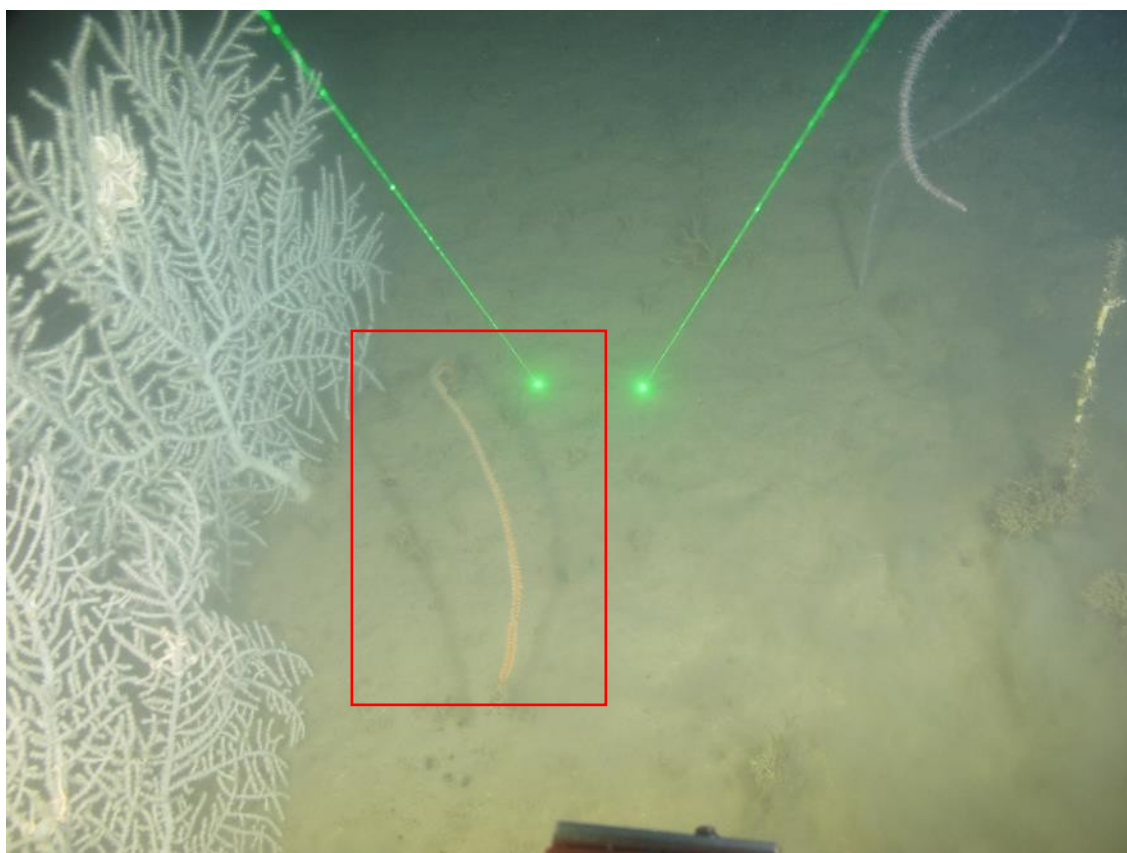
*Antipathes* sp. (DFH33-536B) specimen collected from MacNeil Bank at 86 m depth. Lasers are 10 cm apart.

DFH8-18B (DFH33-537A) specimen collected from MacNeil Bank at 84 m depth.

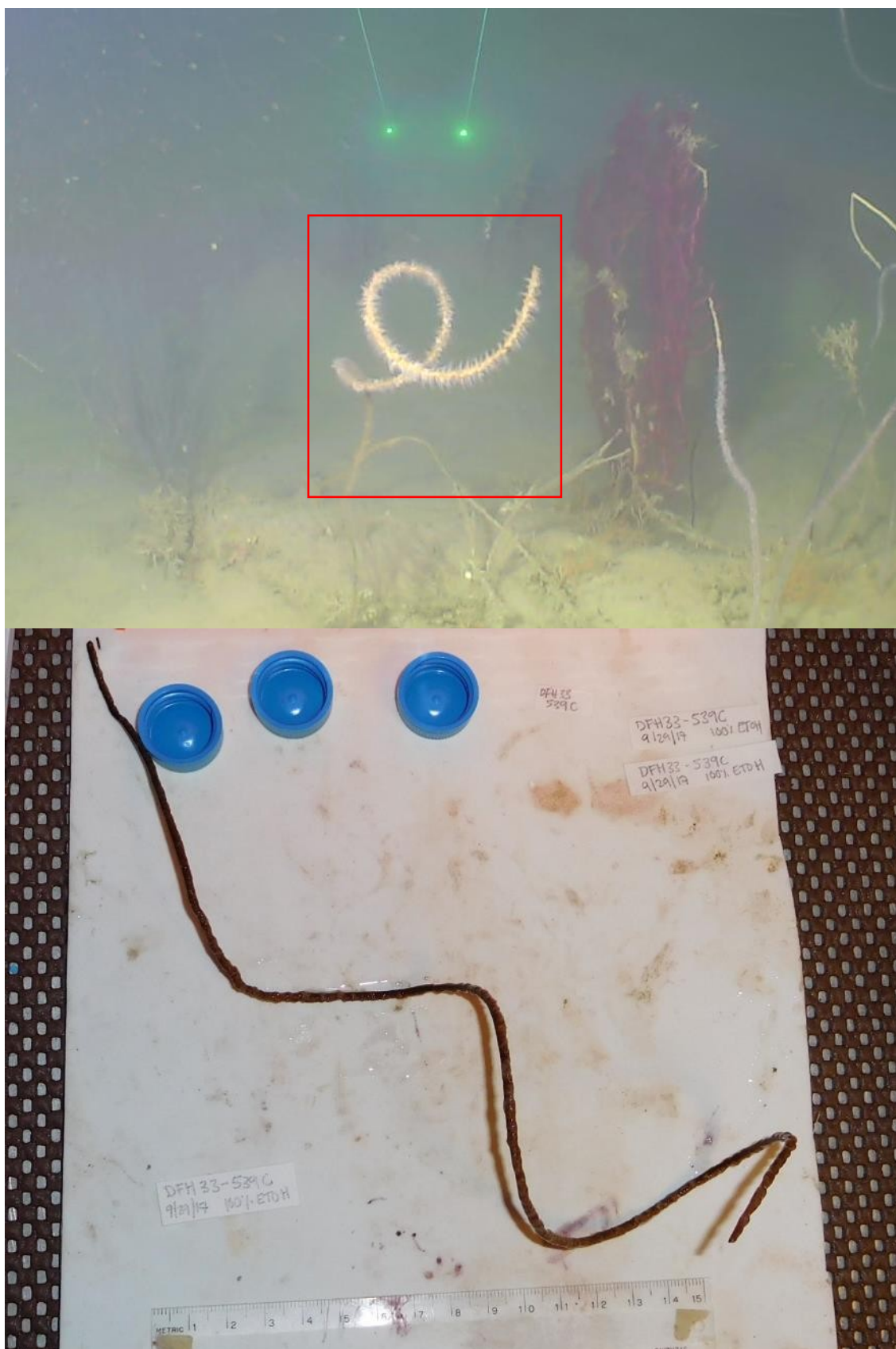




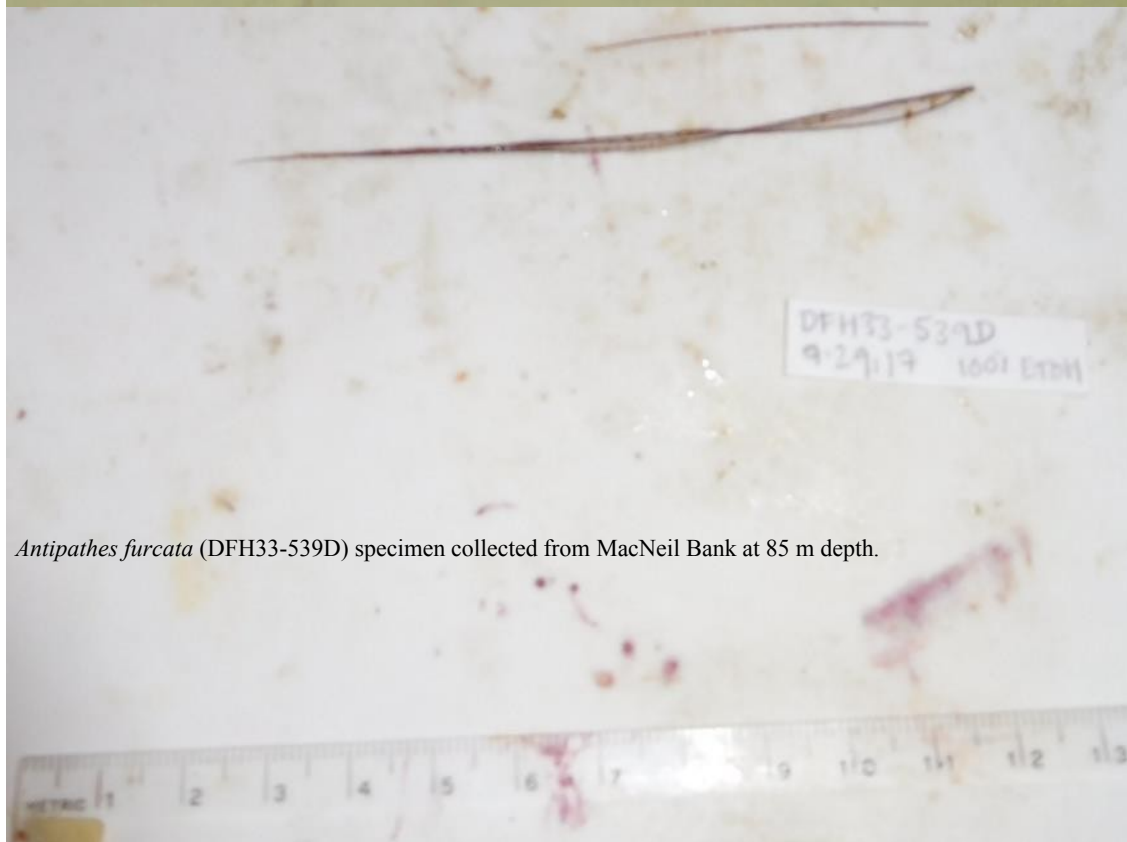
*Hypnogorgia* sp. (DFH33-539A) specimen collected from MacNeil Bank at 86 m depth.



*Ellisella barbadensis* (DFH33-539B) specimen collected from MacNeil Bank at 86 m depth. Lasers are 10 cm apart.



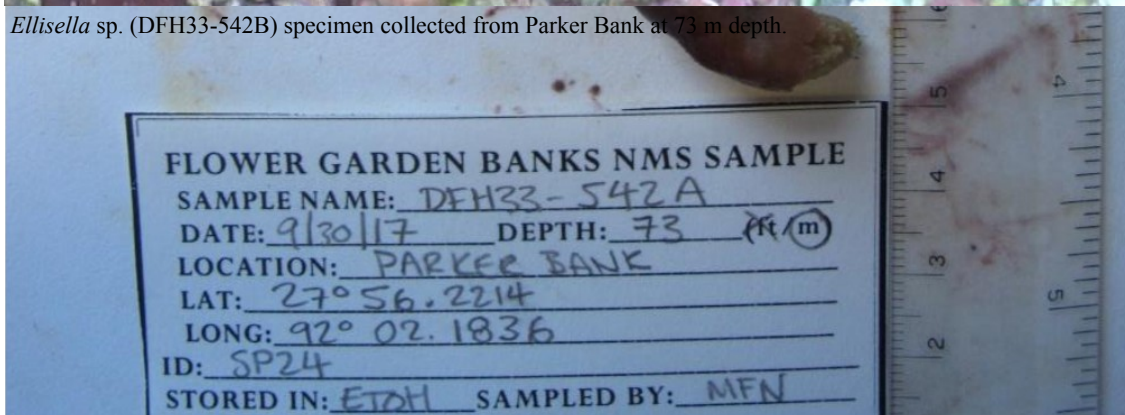
*Stichopathes* sp. (DFH33-539C) specimen collected from MacNeil Bank at 86 m depth. Lasers are 10 cm apart.



*Antipathes furcata* (DFH33-539D) specimen collected from MacNeil Bank at 85 m depth.



*Ellisella* sp. (DFH33-542B) specimen collected from Parker Bank at 73 m depth.



Bryozoan (DFH33-542A) specimen collected from Parker Bank at 73 m depth. Lasers are 10 cm apart.



Unidentified orange gorgonian (DFH33-543A) specimen collected from Parker Bank at 118 m depth. Lasers are 10 cm apart.



*Elatopathes* sp. (DFH33-543) specimen collected from Parker Bank at 118 m depth.



*Tanacetipathes* sp. (DFH33-543D) specimen collected from Parker Bank at 123 m depth.

*Elatopathes* sp. (DFH33-543C) specimen collected from Parker Bank at 118 m depth.





Unidentified pink/yellow gorgonian (DFH33-543E) specimen collected from Parker Bank at 133 m depth.



*Nicella* sp. (DFH33-543H-N) specimens collected from Parker Bank at 133 m depth.

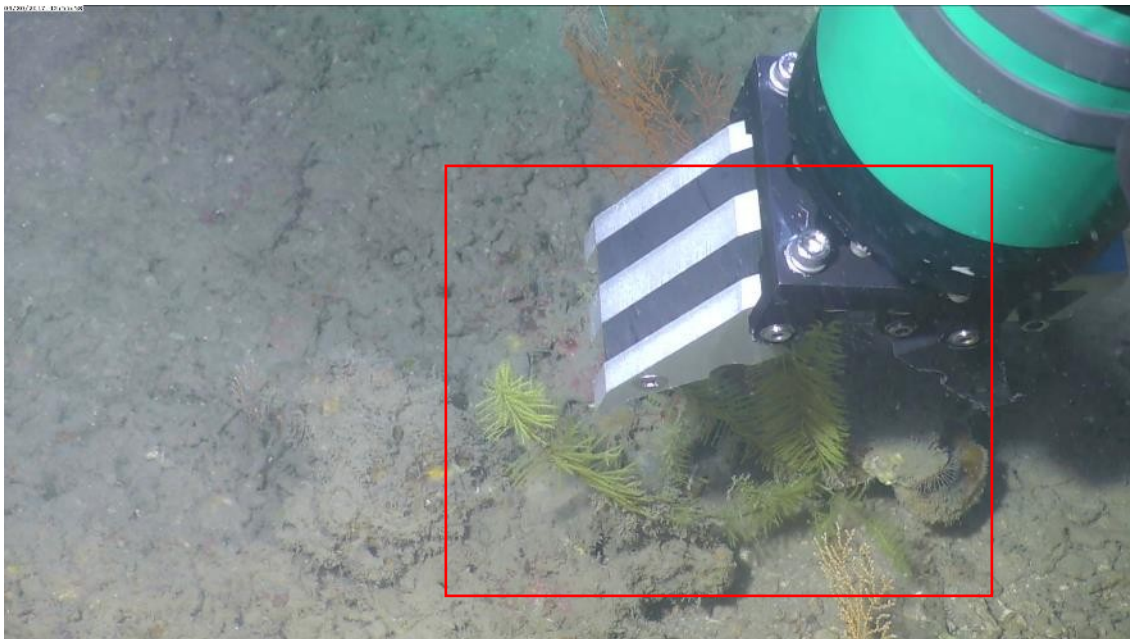


Unidentified crab (DFH33-543F) specimen collected from Parker Bank at 133 me depth.

*Elatopathes* sp. (DFH33-543G) specimen collected from Parker bank at 133 m depth.



Unidentified branching white stony coral (DFH33-544A) specimen collected from Parker Bank at 126 m depth.



*Elatopathes* sp. (DFH33-544B) specimen collected from Parker Bank at 116 m depth.



*Elatopathes* sp. (DFH33-545A) specimen collected from Parker Bank at 117 m depth.



White branching *Elatopathes* sp. (DFH33-546A) collected from Parker Bank at 112 m depth.



Unidentified sponge (I09) (DFH33-546B) specimen collected from Parker Bank at 112 m depth.

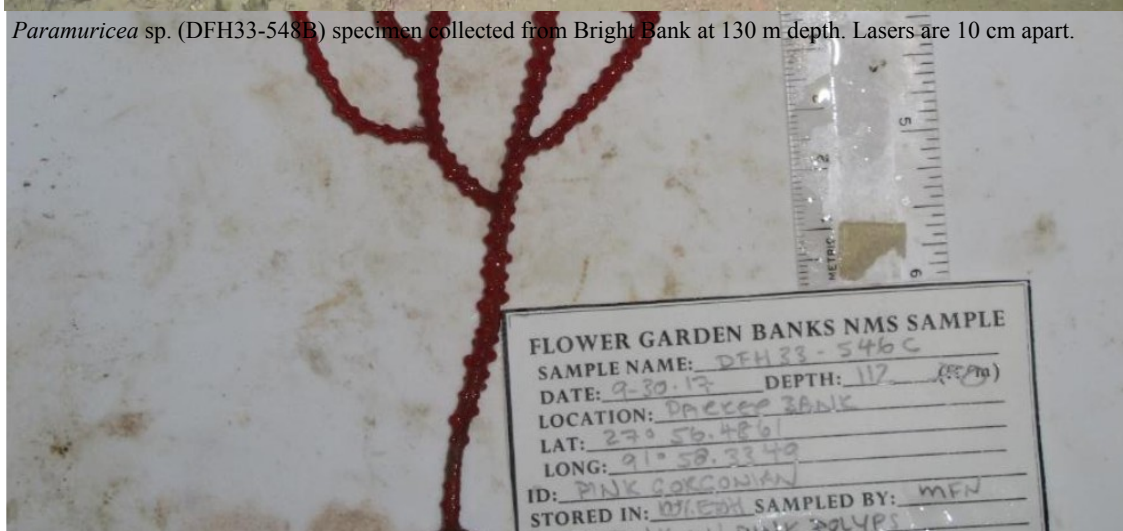
Coral rubble (DFH33-547A) collected from Parker Bank at 122 m depth. Lasers are 10 cm apart.

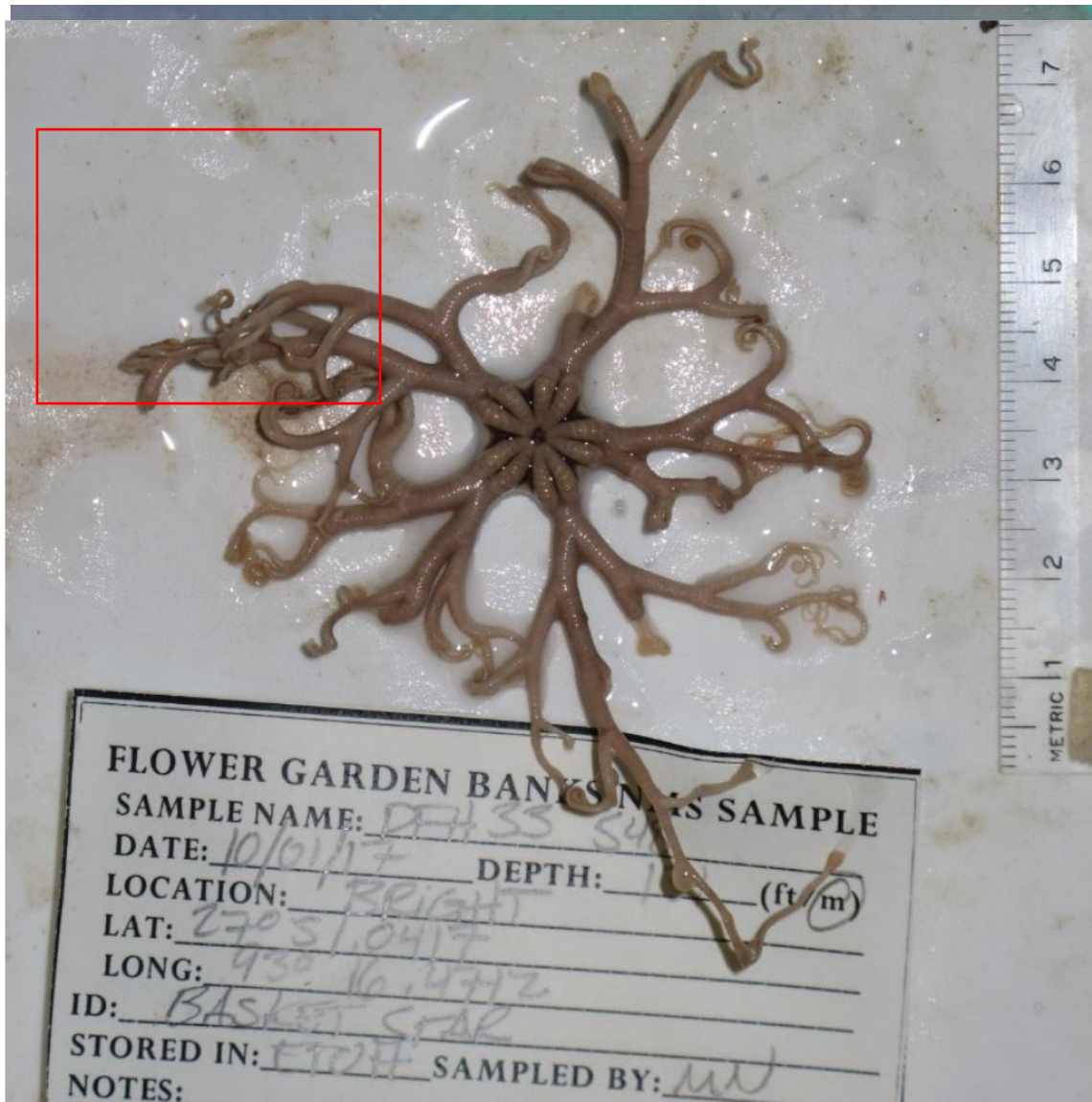


Unidentified red gorgonian (DFH33-548A) specimen collected from Bright Bank at 131 m depth. Lasers are 10 cm apart.



*Paramuricea* sp. (DFH33-548B) specimen collected from Bright Bank at 130 m depth. Lasers are 10 cm apart.





Basket star (DFH33-548D) specimen collected from Bright Bank at 131 m depth.

*Elatopathes abietina* (DFH33-548C) specimen collected from Bright Bank at 135 m depth. Lasers are 10 cm apart.



Unidentified sponge (109) (DFH33-551A) specimen collected from 28 Fathom Bank (Bright Bank complex) at 134 m.